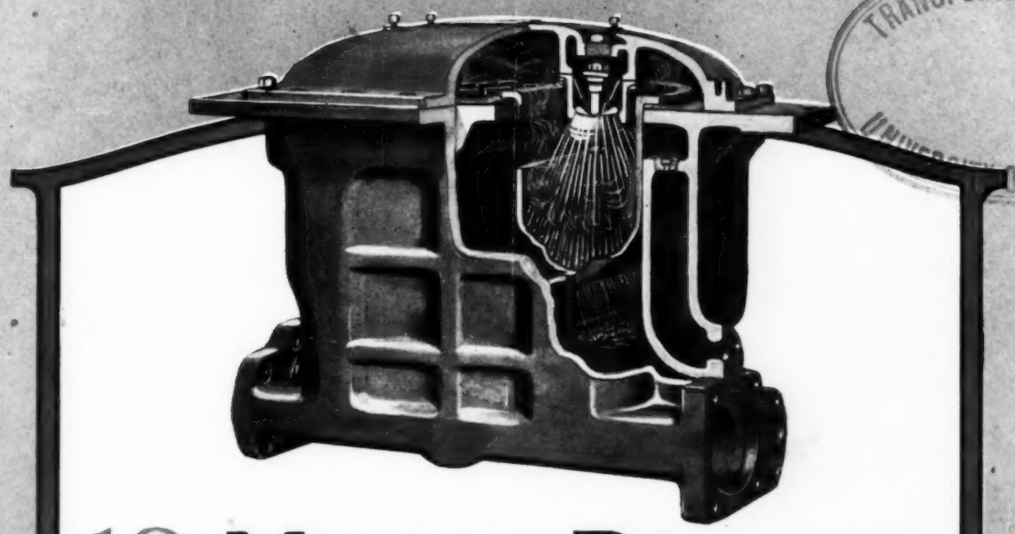
OCTOBER 19, 1929

Railway Age

FOUNDED IN 1856

TRANSPORTATION LIBRARY
UNIVERSITY OF MICHIGAN



10 MAJOR RESULTS
proved by 135 Railroads on 4000 Locomotives

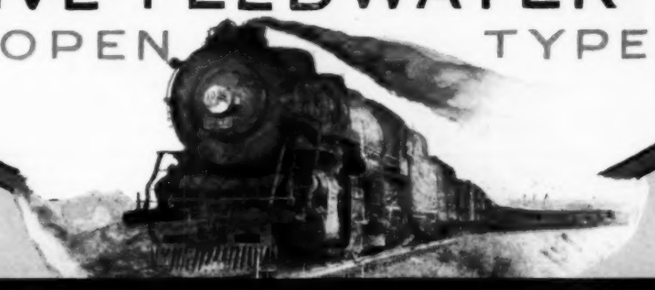
RAILROADS using Worthington Open Type Locomotive Feedwater Heaters, in widely scattered parts of the world, have definitely proved that the equipment gives these outstanding results:

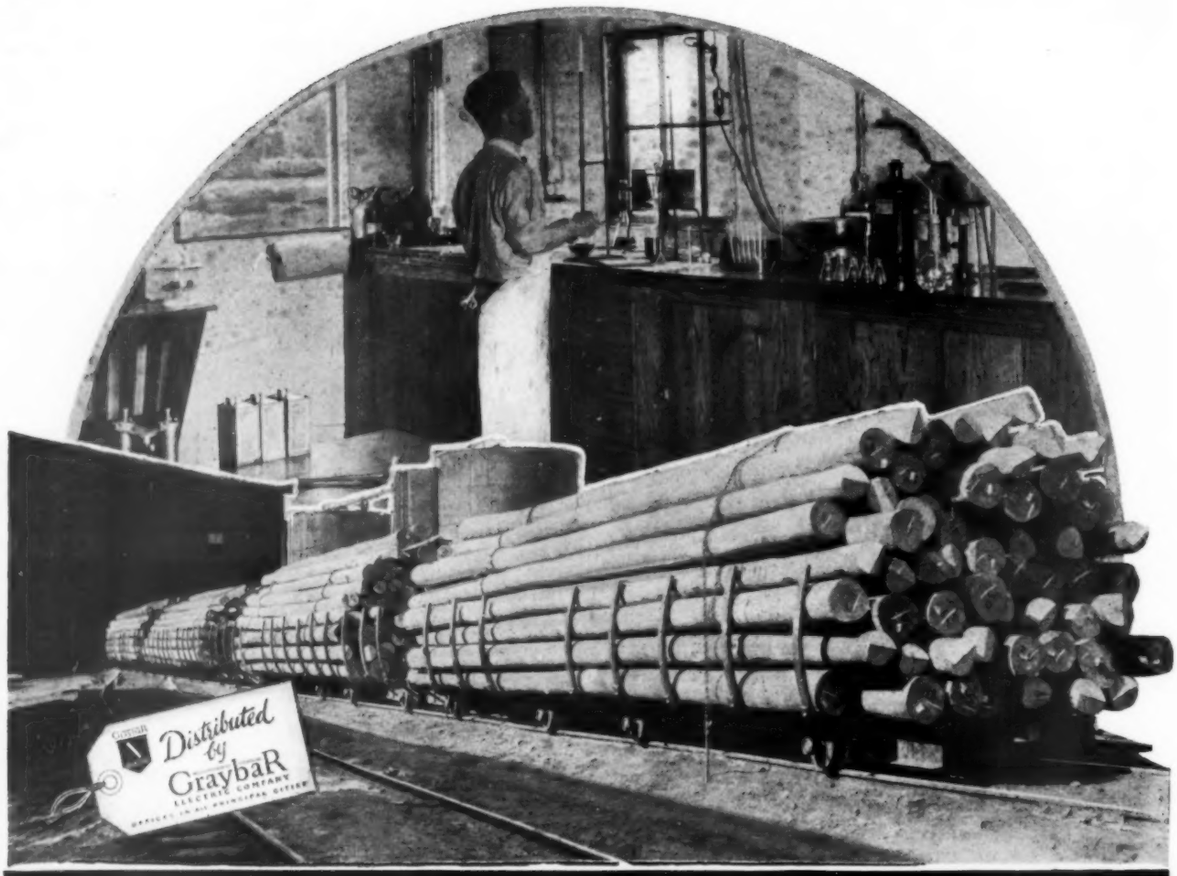
1. Saves 12% of fuel
2. Saves 14% of water
3. Increases boiler capacity 10% to 13%
4. Increases drawbar pull at speed
5. Reduces stops for water and coal
6. Reduces boiler maintenance
7. *Removes 80% to 90% of corrosive oxygen from feedwater*
8. Purifies water
9. Reduces scale accumulation in boiler
10. Extends economic life of old engines by increasing steaming capacity and reducing fuel consumption

WORTHINGTON

LOCOMOTIVE FEEDWATER HEATERS

OPEN TYPE





More than just poles and creosote oil enter *International* cylinders. The timber is absolutely sound and the creosote oil is of the highest grade. Treating operations are carried on by engineers who have made a life study of timber and its treatment. All technical observations such as moisture determinations, creosote analysis and depth of penetration are made by graduate chemical engineers.

International Poles in service 30 years and still strong prove International methods.

2IC9
The International Dating Nail

International Creosoting & Construction Company
General Office: Galveston, Texas

International Creosoted Yellow Pine Poles

Published weekly by Simmons-Boardman Publishing Company, 34 North Crystal Street, East Stroudsburg, Pa. Entered as second class matter, March 9, 1928, at the Post Office at East Stroudsburg, Pa., under the act of March 3, 1879.
Address communications to 30 Church St., New York City.

Published every Saturday by the Simmons-Boardman Publishing Company, 34 North Crystal Street, East Stroudsburg, Pa., with executive offices at 30 Church Street, New York

All communications should be addressed to the New York Office, 30 Church Street

EDWARD A. SIMMONS, *President*
LUCIUS B. SHERMAN, *Vice-Pres.*
HENRY LEE, *Vice-Pres.*
SAMUEL O. DUNN, *Vice-Pres.*
CECIL R. MILLS, *Vice-Pres.*
FREDERICK H. THOMPSON, *Vice-Pres.*
ROY V. WRIGHT, *Sec'y*
JOHN T. DEMOTT, *Treas.*

CHICAGO:
105 West Adams St.

WASHINGTON:
17th and H Streets, N. W.

CLEVELAND:
Terminal Tower

SAN FRANCISCO:
215 Market St.

Editorial Staff

SAMUEL O. DUNN, *Editor*
ROY V. WRIGHT, *Managing Editor*
ELMER T. HOWSON, *Western Editor*
H. F. LANE, *Washington Editor*

B. B. ADAMS
C. B. PECK
W. S. LACHER
ALFRED G. OEHLER
F. W. KRAEGER
E. L. WOODWARD
J. G. LYNE
J. H. DUNN
D. A. STEEL
R. C. AUGUR
R. A. DOSTER
JOHN C. EMERY
MARION B. RICHARDSON
H. C. WILCOX
R. S. KENRICK
NEAL D. HOWARD
RICHARD W. BECKMAN
LLOYD GEORGE
CHARLES LAYNG
GEORGE E. BOYD
WALTER J. TAFT
GARDNER C. HUDSON

The Railway Age is a member of the Associated Business Papers (A. B. P.) and of the Audit Bureau of Circulations (A. B. C.)

Subscriptions, including 52 regular weekly issues and special daily editions published from time to time in New York, or in places other than New York, payable in advance and postage free: United States, Mexico and Canada, $6.00. Foreign countries not including daily editions $8.00.

Subscriptions for the fourth issue each month only (published in two sections, the second of which is the Motor Transport Section) payable in advance and postage free; United States, Mexico and Canada, $1.00; foreign countries, $2.00. Single copies, 25 cents each.

Railway Age

With which are incorporated the Railway Review, the Railroad Gazette and the Railway Age-Gazette. Name Registered U. S. Patent Office.

Vol. 87 October 19, 1929 No. 16

In this Issue

Helping Agents to Help Themselves ..... Page 903

Tells how Canadian National, through plan of giving agent every possible advisory assistance, effected a marked reduction in station operating costs.

Consolidation and Waterways Chief Topics Before Traffic Clubs 913

A report of the semi-annual meeting at St. Louis which was attended by nearly 550 members of 30 traffic clubs and their guests.

Some Factors in the Freight-Car Draft-Gear Problem 925

Louis E. Endsley, consulting engineer, Pittsburgh, Pa., discusses assumed advantages of increased gear travel.

EDITORIALS

Railways and Waterways 899
A Lesson From Canada 900
What Is the Purpose of Cost Accounting? 901
Should Tracks Be Anchored on Bridges? 901
The Flagging Rule in Signaled Territory 901
Railway Financial Results 902

GENERAL ARTICLES

Helping Agents to Help Themselves 903
Bridge and Building Association Meets at New Orleans 905
The "Greater Wabash" Plan from a Traffic Standpoint, by F. J. Lisman 911
Freight Car Loading 912
Consolidation and Waterways Chief Topics Before Traffic Clubs 913
I. C. C. to Consider Reproduction Cost in Valuation Revision 917
Safety Men Discuss Use of Motor and Hand Cars 918
A. E. R. A. Receives Report on Heavy Electric Traction 924
Some Factors in the Freight-Car Draft-Gear Problem, by Louis E. Endsley 925
Helium Tank Tested at Milwaukee 927
Hill Retires as Chairman of Great Northern Board 929
S. A. L. Refinancing Plan 930

LOOKING BACKWARD 931

COMMUNICATIONS AND BOOKS 932

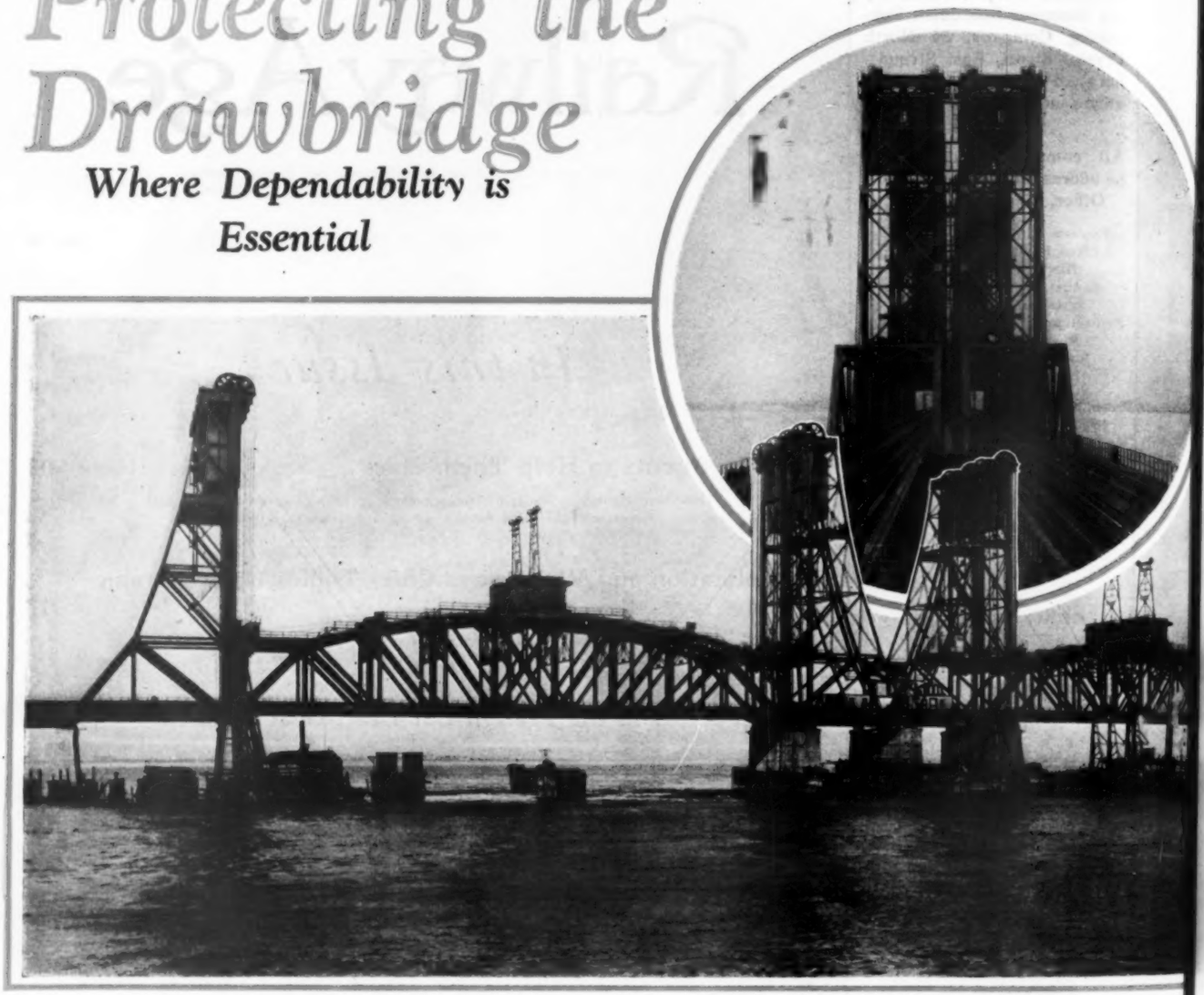
ODDS AND ENDS OF RAILROADING 933

NEWS OF THE WEEK 934

The Railway Age is indexed by the Industrial Arts Index and also by the Engineering Index Service

Protecting the Drawbridge

Where Dependability is Essential



In selecting "Union" Electro-Pneumatic Interlocking to protect the four-span drawbridge over Newark Bay, the Central Railroad of New Jersey was guided by many years' successful experience with "Union" apparatus. But there is more than the reputation for dependability and durability that is characteristic of all "Union" apparatus in this interlocking. It is "Union's" half-century of experience that protects the artery of traffic over this drawbridge.

In the years that "Union" Electro-Pneumatic Interlocking has been available, many railroads have derived benefit from it. Most of the large terminal interlockings are Electro-Pneumatic; and the three largest interlockings, from the standpoint of operated functions are Electro-Pneumatic, also. Beside these there are many small isolated plants which have been equipped with "Union" Electro-Pneumatic Interlocking.

—District Offices—

NEW YORK MONTREAL CHICAGO ST. LOUIS SAN FRANCISCO

Railway Age

Vol. 87, No. 16 October 19, 1929

Table of Contents Appears on Page 5 of Advertising Section

Railways and Waterways

IN an address at the meeting of the Associated Traffic Clubs of America in St. Louis this week, R. H. Aishton, president of the American Railway Association, stated authoritatively and clearly the policy of the railways as a whole with regard to the development of inland waterway transportation. The railways are not opposed to the development of waterways. They are opposed to the government continuing to engage in competition with them as the owner and operator of a barge line, because they believe the government should not engage in competition with private enterprise. They are especially opposed to the government, in its operation of the Inland Waterways Corporation, disregarding costs such as the railways must incur, as, for example, interest upon the investment in its barge line. Finally, they are opposed to the government requiring the railways to accept lower divisions of rates in making joint rates in connection with the barge line than the same railways accept in making joint rates with connecting railways. "I am sure it will appeal to every fair-minded traffic man," said Mr. Aishton, "that a rail carrier should not receive less for the same transportation service when it delivers traffic to the barge line than it would receive if it delivered traffic to another rail carrier."

While, as Mr. Aishton's address indicates, the railways decline to be put in a position of offering organized opposition to the improvement of waterways, this cannot reasonably or fairly be construed to mean that railway officers, as students of public problems, and especially of transportation economics, believe that the development of artificial waterways will not adversely affect the railways or that it will be of public benefit.

"An Economic Transportation System"

The discussion of waterways takes some curious turns. Some remarks made in the *Railway Age* were quoted and commented upon in an editorial in the Washington (D. C.) Post on September 22. The Washington Post editorial was approvingly reprinted in the Congressional Record of September 23, as "remarks" by Senator Duncan U. Fletcher of Florida. As an expression of the point of view of waterway advocates some of the statements made are interesting.

"There is no merit in the suggestion that railways and waterways are opposed," said the Washington Post. * * * "Without utilization of waterways it is impossible to develop an economic transportation system, and an uneconomic transportation system affects the railways to as great an extent as it does all other business." As the amount of freight transported has increased relatively much more rapidly in the United States than in any other country in the world, and as the amount of freight handled per capita is much greater in this country than in any other, it would appear that the United States either has not needed an economic transportation system, or that it has actually had one.

"Bulky freight," added the Washington Post, "when moved by rail must pay a premium for speed which is unwarranted. The assertion that waterway service will not be cheaper than railway may be challenged." This goes to the heart of the entire matter. The *Railway Age* ventures to ask the Washington Post what it includes in the cost of water transportation when it "challenges" the statement that service by water will not be cheaper than by rail. Does it include not only freight rates, but also the taxes paid by the public for maintaining the waterways and for interest upon the investment made in improving them? If so, what facts can it cite indicating that excepting on the ocean and the Great Lakes, there is any service by waterway being rendered in the United States or any other country that is cheaper than the freight rates charged by American railways?

The Washington Post refers especially to the transportation of bulky commodities. The rates of the railways for carrying such commodities are lower than for the movement of freight of less bulk and more value. Where, in this or any other country, are coal and other bulky commodities being carried on improved rivers or canals at lower total costs than the freight rates charged by our railways for handling such commodities? If the Washington Post cannot cite any such cases, then let it tell us what will be the total costs of transporting bulky commodities after improvements in waterways now being advocated are made. Of course, if development of waterways will not reduce total costs of trans-

portation it necessarily follows that their development will not help provide "an economic transportation system."

"Waterways will reach into the sources of traffic, bearing it to the railways and increasing their prosperity," the Washington Post continues, and concludes, "Many railway men know that the development of inland waterways is in their best interest." The mileage of the railways is about 250,000 miles. The total length of our navigable streams has been estimated at 18,000 miles, or 8 per cent of the mileage of the railways. Plainly, therefore, the Washington Post's statement is exactly the opposite of correct, and it is the railways that must reach into the sources of traffic and bring it to the waterways if the latter are to have any considerable traffic. And this is precisely what the government is trying to force the railways to do by trying to make them fix joint rates in connection with its barge line that are lower than they make in connection with other railways.

Railway Men and Waterways

We have great curiosity as to whom the Washington Post refers to when it says, "Many railway men know that the development of inland waterways is in their best interest." Who are these railroad men? The *Railway Age* surely knows railroad men and their views better than the Washington Post, and this paper has yet to hear any railroad man advocate waterway development in the interests of the railroads. Railroad men know that the development of waterways either will or will not result in an increase in the traffic carried by water. If the former is the result, it will involve the diversion of traffic that otherwise would be carried by rail. If the latter is the result, it will mean that most of the money expended by the public on the development of waterways will be wasted. Well-informed railroad men do not accept the view that the development of waterways will result in increased traffic for the railways, because they believe that the total cost of transportation by artificial waterways will be greater than by rail, and they know that the growth of traffic cannot be stimulated by increasing the economic cost of handling it.

Of course, the important question is not what effect the development of waterways will have upon the railways, but what effect it will have upon the public welfare. The correct answer to that question depends upon whether, allowing for differences in the quality of service, the cost of transportation by artificial waterways, including the part of the cost paid by the taxpayers, will be less than the cost of transportation by rail. Let the advocates of waterways meet the issue squarely. Let them bring forward reliable estimates of the probable costs by water that include what the taxpayers will pay. As long as they fail to do so their failure should be construed as an admission that they have no case that can be supported by the only kind of evidence that would be valid.

A Lesson From Canada

WHEN a country has no transportation facilities at all—except those primitive methods available to our ancestors of one or two centuries ago—what form of transportation does it first seek? While this question may at first appear academic, nevertheless its answer probably will disclose the relative importance to the general welfare of various forms of transport.

Canada provides an answer to the question. The Dominion has vast areas of land rich in resources under development. When settlers move to this land their overwhelming demand is, not for concrete highways, not for canals, but for railways. Why? The answer is not far to seek. It is because of the fact that the railway is the only agency of transportation which, for continental areas makes available all the amenities of civilization to an isolated district.

When the prospector goes into the bush, afoot or in a canoe, he carries only tools of livelihood with him. If he locates valuable minerals and capital is forthcoming, the question of bringing in mining machinery arises. This can be brought in by water over portages or over rough highways—but at tremendous expense. The airplane can be relied upon to supply fresh foods and to bring in mail and passengers—but also at tremendous expense. Not until the railway arrives does life in the frontier community assume the aspect of that of communities in developed areas.

Of little use in the development of economic life in a newly opened country would be a 500-mile concrete highway. The highway might facilitate greatly the transportation of passengers, mail and articles of high value in relation to bulk, but it would not greatly help the farmer or the miner in bringing their products to a market in which competitors enjoyed railroad service.

Every transportation agency can contribute to the general welfare and should be developed to the utmost within the range of its true economic sphere. The danger lies in artificially stimulating any given agency to intrude into a realm which, economically, belongs to another. The airplane provides great speed, but with some irregularity, for lading of great value in proportion to its weight. The motor vehicle on an improved highway offers great flexibility and speed for short distances, but becomes comparatively expensive and slow at longer distances. The artificial waterway can give somewhat undependable and very slow transportation to bulky commodities, but at the expense of disproportionately large capital outlays. The railway provides reasonable celerity of service for both light and bulky commodities and for passengers and mail at reasonable operating and capital costs over distances ranging from a few miles to the extent of a continent.

American public men, who in their advocacy of an outgrown form of transportation, the inland waterway, or in their uncritical enthusiasm for the newer forms, the motor vehicle and the airplane, have forgotten the lessons which the history of their own country teaches, might profitably look to Canada. There the firm eco-

nomic foundation upon which railroad transportation rests is again being demonstrated. There the railroad is once again showing itself to be, for a continental area, the one transportation agency which will serve to remove all vestiges of primitive living conditions and bring in all the amenities of civilization.

What Is the Purpose of Cost Accounting?

COMMISSIONER Eastman's proposed report in the general accounting revision case, *Ex Parte 91*, is largely devoted to cost accounting. Much of the space is given over to the "Alternative Plan," which was devised by J. W. Roberts, an accountant who was employed by the National Industrial Traffic League. This witness testified (page 84 of the record) that "the main purpose of cost intelligence is to aid the management." Commissioner Eastman's proposed report expresses doubt as to the justification of the Commission's considering cost accounting solely as an aid to management, and finds that the subject should be approached by the Commission, if at all, from the standpoint of the needs of public regulation.

Witnesses for the Railway Accounting Officers Association (the official spokesman for the railroads on accounting questions) testified that the Alternative Plan would not serve as an aid to management. Their testimony was substantiated by J. E. Slater, a witness appearing at the invitation of the Commission, upon the suggestion of the National Industrial Traffic League.

In brief, the proposed report justifies a recommendation that the application of cost accounting to railroads be further studied largely because of some possible assistance which the Commissioner believes it might afford to public regulation, whereas the outstanding exponent of cost accounting who testified at the hearings considered the process primarily as an aid to management.

Mr. Roberts (page 84 of the record) testified further that "cost accounts and financial accounts seldom can be amalgamated. They serve widely different purposes and eventually must assume different form. For current cost accounts to comprehend each and every kind and class of business moving, furthermore, takes in too much territory in our judgment, and would exceed the practical requirements."

It is interesting to observe that the hearing was limited to the accounting classifications, while Mr. Roberts specifically says that cost accounting must serve widely different purposes and must assume different form from the accounting classifications. The Commissioner's proposed report (page 14) states that the proponent of the Alternative Plan was "careful to explain that it is not intended to eliminate necessity for special cost studies." It might properly have been added that no plan has been suggested for railroad cost accounting which would do away with special cost studies.

Should Tracks Be Anchored on Bridges?

ONE of the outstanding developments of the last 10 or 15 years has been the marked increase in the use of rail anchors or anti-creepers as a means of preventing, or at least reducing, the longitudinal movement of tracks. It is true that some tracks continue to creep, but not to the extent that was the common experience when slot-spiked angle bars were the sole form of anchorage employed.

An exception must be made, however, in the case of tracks on open-floor bridges. Owing to certain inherent difficulties not encountered in ordinary ballasted track, most railroads do not anchor rails to bridge ties or bridge floor members on other than movable spans, and with bridges of moderate length rail creeping can be controlled by effective anchoring on the approach embankments. But on long bridges it is another story. Failure to provide anchorage results in movement of the rails that is sometimes so extensive as to require the installation of switch points through which the moving rails can be introduced at one end of the bridge and released at the other.

Efforts to solve this problem are confronted with the complications introduced by the changes in the lengths of bridge spans resulting from temperature changes, and which occur also as a result of flexure with the passing of each train. There is also imposed the uncertainty as to the magnitude of the forces which the bridge structure must resist in the event that effective anchorage is introduced. These difficulties, however, should not militate against efforts to arrive at a practical solution of the problem, for there are situations where running rail is troublesome.

The Flagging Rule in Signaled Territory

IN the opinion of numerous operating officers, the enforcement of Rule 99, requiring full flagging protection, is as much of a menace as a safeguard in automatic block signal territory. A fundamental feature of automatic signaling is rear-end protection, and these officers contend that, knowing this, the flagmen depend upon the signals and the alertness of the enginemen of following trains in observing their indications. As a result, numerous accident reports contain the following statement: "The flagman was not back as far as the time permitted." On the other hand, the engineman of a following train may depend too much on the flagman and fail to govern his speed according to the signal indications, especially in a caution block.

This division of responsibility has been the cause of accidents. Also, the time consumed in calling in a flagman, if spent in getting a train started, would place it

out of the way of a following train that much quicker. This alone would eliminate rear-end collisions in the immediate vicinity of stop signals, which is the place where such an accident might occur if the engineman of a following train over-ran a signal.

The benefits that result from the elimination of flagging in automatic signal territory are, to a certain extent, being derived on the Northern Pacific. On this road, which has over 2,500 miles of line equipped with signals, Rule 99 is modified so that a flagman is not required to go back to protect his train if he can see an automatic signal at danger at least one-half mile to the rear of his train. Although used with semaphore signals on the Northern Pacific, this modification in flagging rules can, of course, be adopted with light signals if a back light is provided on the danger unit, and the signal lights are so controlled as to be illuminated when the approach or home block is occupied.

The elimination of flagging in automatic signal territory is not only of merit in preventing accidents, but is also a means of reducing delays. It thus deserves the serious thought of progressive railroad officers.

Railway Financial Results

MOST of the railways continue, month after month, to report more satisfactory financial results than at any time since 1916. Their best previous year since the war was 1926. In the first eight months of that year the Class I roads earned net operating income at the annual rate of 5.13 per cent, while in the first eight months of 1929 they reported net return at the annual rate of 5.5 per cent. Owing to some unsatisfactory conditions in their territory, the railways of the southern district (excluding the Pocahontas region) are making a relatively poor showing. Those of the eastern district are doing somewhat better, and those of the western district much better, than in 1926.

In the first eight months of the year the Class I roads, as a whole, reported almost 21 per cent more net operating income than in 1928, and 11 per cent more than in 1926. In August, however, they reported only 10 per cent more than in 1928, and 6.4 per cent more than in 1926. They did better, as compared with both 1928 and 1926, in the first half of the year than they are doing in the second half of the present year, and apparently this will continue to be the case; but there can be no question now that, in the entire year, they will, as a whole, report the best financial results that have been obtained for 13 years.

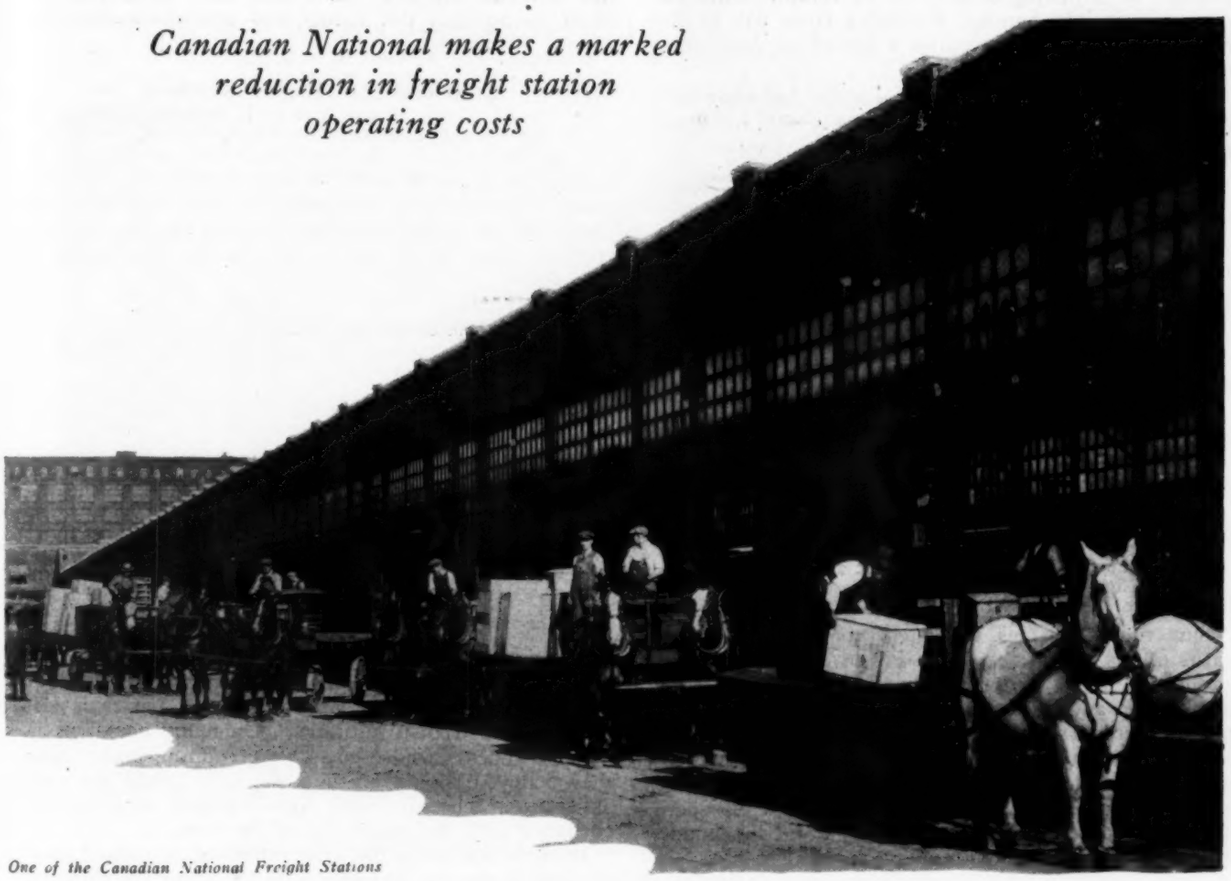
There is, however, one factor of considerable importance affecting the total earnings and especially the net operating income, that are being reported this year, the general ignoring of which is tending to create a belief that the railways are prospering more than they actually are. The Interstate Commerce Commission last year held that for the carriage of the mails at rates that were not sufficiently remunerative during the 3½ years ended August 1, 1928, the government owed the railways about $48,000,000. This decision was subsequently upheld by the Supreme Court, and since then this back mail pay has been in process of being taken into railway earnings. The amount of it included in the total earnings, and consequently in the net operating income, of the Class I roads, in the first eight months of this year was almost $26,000,000. The net operating income earned in these eight months, exclusive of this back mail pay, was only about 17 per cent greater than in the corresponding part of 1928, and 7½ per cent greater than in 1926, and was at the annual rate of only about 5.33 per cent, as compared with 5.13 per cent in 1926.

The reasons for the comparatively good results that are being secured do reflect great credit upon railway management, because it is easily demonstrable that they are principally due to improvements that have been made in physical properties and in operating methods. Passenger business has been smaller and freight business larger than in 1926. The total operating revenues reported to the end of August were about $35,500,000 greater than in 1926, and, exclusive of back mail pay, were about $7,000,000 greater. This increase was entirely due to the handling of a larger volume of freight business, because average rates, both passenger and freight, were lower. Government authorities took from the railways in taxes almost $15,600,000 more than in the corresponding part of 1926, however, and so the difference between what the railways received from the public and what the governments took back from them was less than $20,000,000. An increase in rentals paid for equipment and joint facilities consumed almost $8,000,000 more of the total increase in earnings. Nevertheless, there was an increase in net operating income of more than $82,000,000. This was due partly to the increase in total earnings, but more largely to a reduction of almost $70,000,000 in operating expenses. The principal reason for this reduction in operating expenses was that although the average wage paid was higher than in 1926, the average number of persons employed was 114,000 less.

Whether the railways can, in any year, reduce their operating expenses depends largely, of course, upon the amount of traffic to be handled. The freight business of 1929 has thus far shown a large increase over that of 1928, and in the first eight months of this year an increase (exclusive of back mail pay) of about $200,000,000, or 5 per cent, in total earnings over the corresponding part of last year was accompanied by an increase in operating expenses of only $61,000,000, or about 2 per cent. The number of employees now has been for some months larger than last year. Increasing the efficiency and economy of operation consists, however, in increasing the output of transportation per man hour of labor and per ton of fuel and materials used. Measured by this standard, efficiency and economy of operation are steadily increasing, and are greater this year than they ever were before.

Helping Agents to Help Themselves

Canadian National makes a marked reduction in freight station operating costs



One of the Canadian National Freight Stations

IN 1928, the wage cost for station service on the Canadian National was $17,383,598 whereas if it had continued at the same ratio as in 1922, station service wages would have cost the road $5,000,000 more. This saving was made, not through the betterment of facilities, or by capital expenditures of any kind, but by improvement in methods. In building up these improved methods and fostering their use on a system-wide basis, a rather unusual procedure was followed, in that the agents were encouraged and permitted to work out their own salvation.

The plan, as devised by the staff in general charge of station operation, was to be prepared to give the agent every possible advisory assistance, but largely to leave it to him to ask for such assistance when he needed it. The general instructions to the station supervisory force were to aid rather than to harass, to analyze the operation constructively rather than to criticize the result and to wait until the agent asked for help before imposing unwanted attention upon him. The entire plan was based upon the theory that the agents were the men most intimately interested in the efficient operation of their own stations, and that, if provided with opportunities to improve their operations, they would make use of them. The $5,000,000 saving affords ample evidence that this theory was correct.

A superintendent of station service, reporting to the chief of transportation, is in general supervisory charge of station operation. This officer has on his staff a chief freighthouse foreman and a chief freighthouse clerk. Each region has a regional supervisor of station service, who reports to the general manager of the region, while each district has a district agent in charge of station operations, who reports to the general superintendent. Since the object of each of these supervisors is the same, namely, improvement in station operation, there is a free interchange of information, and the utmost co-operation between them, thus insuring efficiency in working toward the common goal.

Training of Supervisors

These supervisors were selected carefully, with an eye to the essential qualifications in each man. The experience of the superintendent of station service, while possibly broader than that of some of the others, is typical. He was in charge of one-man stations in the country, working upward as agent at stations of intermediate size, until he became agent of the largest station on the system. Before becoming superintendent of station service, he also served as division superintendent.

Since taking over his present position, he has made, with the assistance of his staff, a thorough and painstaking analysis of mass production, as it applies to each desk and function, from freight offices with 43 functions, where the force totals 236 men, and freighthouses with 14 functions and 250 men, down to the smallest agencies.

As a stimulation to competitive effort on the part of agents, a cost-accounting system was devised. Under this system, each agent, for his own information and guidance in adjusting man-hours to volume, since the volume of freight handled fluctuates from day to day and season to season, compiles a record of daily costs and operations.

The basic report under this plan is the daily handling cost report, which shows comparatively the following information:

Shed cars in yard at 7 a.m., including cars at shed
Shed cars worked during the day
Shed cars placed and not worked during the day
Shed cars in yard not placed at 6 p.m.
Inbound shipments in shed at 7 a.m.
Inbound shipments unloaded during day
Inbound shipments delivered during day
Outbound shipments loaded during day
Outbound shipments left over in shed
Consignments handled by office
Number of office staff working
Salaries of office staff
Average cost per consignment
Tons of freight handled at shed
Number of shed staff working
Wages of shed staff
Average cost per ton
Tons checked and handled on team tracks
Wages of employees
Average cost per ton
Tons checked only on team track
Wages of employees
Average cost per ton

This report enables the agent to know the exact status of his operations from day to day, from a cost standpoint. It is intended only for the agent's own information and does not go to his supervisory officers except on request. The agent is assumed to have his own interests sufficiently at heart to supervise his own operations, or to ask advice of the visiting supervisors of larger experience if the figures show that his operation is not as efficient as it might be, and he unaided is unable to correct the trend.

Monthly Cost Reports

Once a month, these daily cost figures, prepared by the agent for his own information, are sent to the bureau of statistics in the president's office in the following form:

Number of consignments handled by office staff
Tons of l.c.l. freight handled at shed
Tons of carload freight checked and handled to and from cars on team tracks
Tons of carload freight checked only to and from cars on team tracks
Total office and shed costs
Grand total of agent's payroll

The first item, number of consignments handled by the office staff, is subdivided as follows:

Forwarding (shipping bills)
Received (expense bills)
Interswitched (switching vouchers)
Total

In addition to the number of consignments, the office payroll cost is given, together with the average cost per consignment.

The tons of l.c.l. freight handled at the shed are also subdivided, as follows:

Forwarded
Received
Trans-shipped
On company service
Total

The total shed payroll is given, together with the average cost per ton handled.

The bureau of statistics lists these reports on a blanket sheet, showing the comparative monthly performance at each of the principal stations. These blanket sheets are sent directly from the bureau of statistics to the agents, in order that they may see their relative standing with other agents in the cost performance of the same functions. Thus competitive spirit and individuality are developed, and association in effort encourages the agents and stimulates them to greater efficiency.

Statistics for Smaller Stations

All the larger stations use the foregoing statistics. For the smaller stations, however, where passenger and freight functions are more or less combined, a separate report is prepared by the agents for their own information, and for submission each month to the district agents. These show the totals and the unit costs on the following factors:

Consignments handled by the office
Tons of l.c.l. freight handled
Carloads of revenue and other freight into and out of station
Tickets sold
Pieces of baggage and cans of milk handled
Passenger and freight trains reported to dispatcher
Number of signal lamps lighted
Total units allowed for the work
Total hours of employees
Total of agent's payroll

These reports also show the particulars of the staff employed, and give explanations of any decrease or increase in the work performed or in the expenses incurred.

General Methods

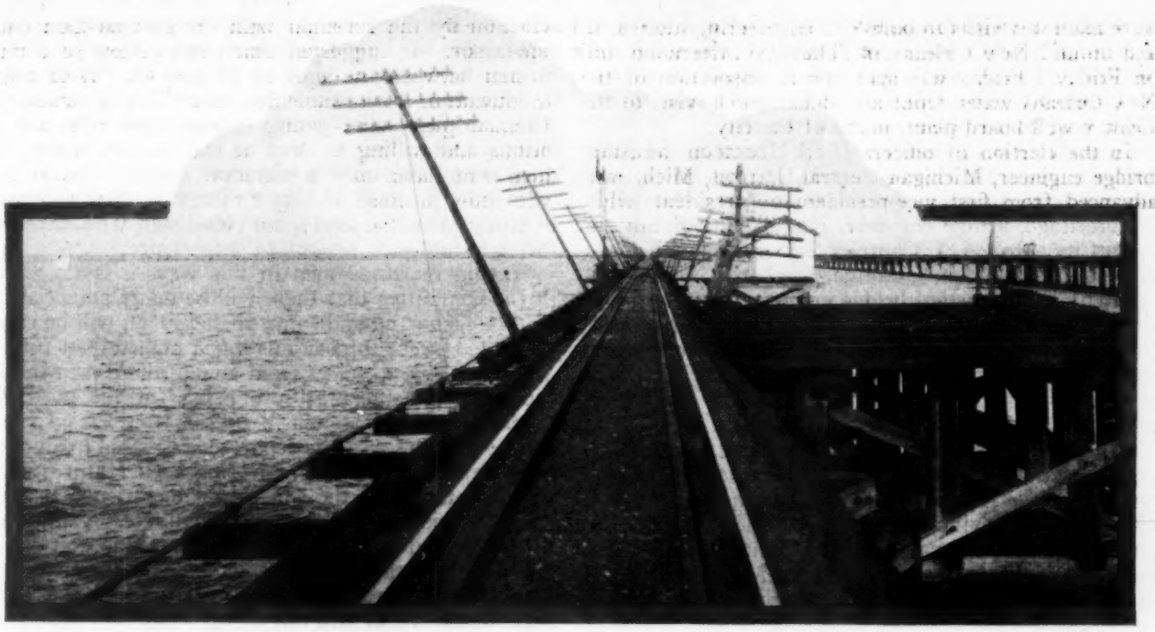
While the agents are invited to take advantage of the supervisory officers' assistance, the matter is left largely to their own initiative. On many occasions in the past, agents whose costs were running higher than they believed should be the case, have asked for such assistance. The procedure then followed varies in accordance with the exigencies of the case.

In some instances, the superintendent of station service and, it may be, together with the chief freighthouse clerk and chief freighthouse foreman, go to the station in question and make a thorough check of all its activities in order to determine what is wrong. If improper methods are being used, this is pointed out to the agent in a constructive way, never critically, and the remedy is suggested. Excellent results have been obtained in this manner at stations whose costs persistently refused to go down.

Every effort is made to keep the supervisory forces and, through them, the agents informed as to the most modern methods of station operation. Not infrequently, an agent or a freighthouse foreman is taken on a trip to see how things are done at other stations. About a year ago, for example, the freighthouse foreman at Halifax, N. S., was sent on an inspection trip which included freighthouses at Montreal, Toronto, Winnipeg, Detroit and Chicago. Shortly after his return, shed wages at Halifax decreased about 10 cents per ton and this decrease has been continued every month since then.

Through analysis of functional costs by an experienced staff, a proper cost is determined for individual stations, but to encourage initiative in method and stimulative competitive effort among the agents in reaching or bettering the predetermined production cost this cost objective is not being used as a basis for criticism but for constructive assistance.

The entire plan is based on the theory of giving the station forces educational assistance when they ask for it. On other occasions, they are encouraged to work out their own problems, which they have been doing with increasing success for the past five years.



A Part of the Southern Railway's Long Creosoted Pile Trestle Across Lake Pontchartrain, North of New Orleans

Bridge and Building Association Meets at New Orleans

Thirty-ninth annual convention was well attended— Valuable papers and reports were presented

THE thirty-ninth annual convention of the American Railway Bridge and Building Association, which was held at the Roosevelt hotel, New Orleans, La., on October 15-17, was attended by 500 persons, including more than 200 members of the association from widely scattered parts of the United States and Canada, members of their families and members of the Bridge and Building Supply Men's Association, which presented an exhibit in the hotel during the course of the convention.

Maro Johnson, assistant engineer, Illinois Central, and president of the association, presided at all sessions. R. C. Watkins, vice-president and general manager, Southern Pacific Lines, welcomed the convention to New Orleans. H. R. Safford, executive vice-president, Missouri Pacific Lines, Houston, Texas, addressed the convention on Wednesday morning, emphasizing the need of railway employees acquainting the public with the necessity for realizing its responsibility for the maintenance of an efficient railway system.

In his opening address President Johnson quoted at length from a handbook of railroad construction written by George L. Vose in 1857, to show that at that early date there was a keen appreciation of the technique of bridge construction and maintenance, and to recognize the debt that the present generation owes to these old builders of wood and cast iron. The report of Secretary C. A. Lichty showed that 54 members were received during the past year and that the present membership is 755.

The program included eight committee reports on diversified subjects relating to the maintenance of railway bridges and buildings which are presented in abstract in the following columns. In addition, there were addresses by J. F. Carter of the Southern Pine Manufacturers' Association and B. R. Ellis of the Southern Cypress Manufacturers' Association on the use of southern pine and cypress, respectively, in railway bridges and buildings. A paper by H. I. Benjamin, assistant bridge engineer, Southern Pacific, described various problems arising in the construction of the Suisun Bay bridge which is being built by the Southern Pacific to replace the Carquinez Straits ferry. A general outline of the project appeared in the *Railway Age* of March 9, 1929, page 575. I. L. Simmons, bridge engineer of the Chicago, Rock Island & Pacific, gave an illustrated talk on the fire in the Harahan bridge at Memphis, Tenn., which was covered in an article in the *Railway Age* of June 29, 1929, page 1549.

More than 300 of those attending the convention arrived at New Orleans on Monday evening on a special train which left Chicago over the Illinois Central at 9 o'clock Sunday morning, stopping for three hours at Vicksburg, Miss., enroute. While the convention sessions occupied all available time on Tuesday and Wednesday, as well as Thursday morning, arrangements

were made for visits to points of engineering interest in and around New Orleans on Thursday afternoon and on Friday. Friday was spent on an inspection of the New Orleans water front and docks and a visit to the Celotex wall board plant, north of the city.

In the election of officers, J. S. Huntoon, assistant bridge engineer, Michigan Central, Detroit, Mich., was advanced from first vice-president to president, while C. S. Heritage, bridge engineer, Kansas City Southern, Kansas City, Mo., A. I. Gauthier, supervisor of bridges and buildings, Boston & Maine, Concord, N. H., and H. I. Benjamin, assistant bridge engineer, Southern Pacific, San Francisco, Cal., were advanced from second, third and fourth vice-presidents to first, second and third vice-presidents, respectively. W. T. Krausch, engineer of buildings, Chicago, Burlington & Quincy, Chicago, was elected fourth vice-president and C. A. Lichty, general inspector, purchasing department, Chicago & North Western, Chicago, was re-elected secretary-treasurer. The new directors for a term of two years are E. C. Neville, supervisor of bridges and buildings, Canadian National, Toronto, Ont., H. H. Best, supervisor of bridges and buildings, Missouri Pacific, Little Rock, Ark., and J. E. King, engineer maintenance of way, Chesapeake & Ohio, Richmond, Va.

Water Transport Facilities

A report presented by C. W. Boyce, chairman of the Committee on the Maintenance of Water Transport Facilities for Railway Equipment, opened with a detailed statement of the car ferry facilities maintained by the railways of the United States across navigable streams and the Great Lakes as well as in various harbors. This was followed by a description of the inclines and cradles required for the transfer of cars from land to the boats, with considerable detail relative to their construction. Considerable space was accorded to the transfers of the Ann Arbor Railroad at Kewaunee, Wis., Manistique, Mich., and Menominee, pointing out some of the difficulties encountered and suggesting changes in design to overcome them.

Selection and Training of Men for the Position of Foreman

The Committee on The Selection and Training of Men for the Position of Foreman, of which C. J. Geyer, assistant to vice-president, Chesapeake & Ohio, was chairman, made a canvass of the practices of a number of roads in selecting and training men. This developed the fact that while most of them have a more or less definite plan for selecting and training foremen, few have sharply defined managerial policies and there is no general plan or scheme recognized by any group of roads. According to the report, a majority of the railroads have contracts or agreements with their employees in the maintenance of way department. Practically all such agreements provide that seniority shall be given consideration in the promotion of men in the foremen classes. Any plan for the selection of foremen must be developed in the light of these seniority clauses in existing agreements and must be absolutely fair to all classes, in order to be sound. It is the thought of the committee that the plan of selecting foremen, outlined in the report could be made to fit such seniority agreements by slight modifications of the plan for a selection agreement without affecting the rights of any class.

Following this statement, the report outlined a plan for the recruiting of the men, which recommends their selection by the foreman with the co-operation of the supervisor. It suggested that employment be confined to men between the ages of 18 and 45. With respect to education, it recommended that "The supervisor and foreman pick some young college men who are ambitious and willing to start at the bottom, some young men who have only a common school education but who show promise of better things by their willingness to study at home, and some older men who have come through the hard school of experience."

Having recruited men in this way, it is the opinion of the committee that there will be many potential foremen in each gang and some of these men will be capable of advancement to positions much higher than foremen. It is then time to select from among these men the ones thought to be the most promising for the position of foremen.

The remainder of the report was devoted to an outline of a method of training, covering such features as personal contact with the supervisor, experience as a gang leader, inspector and relief foreman, etc. With respect to the period of training, the committee felt that no definite time can be recommended, because conditions on each road are different, the ability of the men to take advancement will not be the same and vacancies in the higher ranks will vary with the labor turnover and business requirements.

Discussion

In discussing this report A. I. Gauthier (B. & M.) emphasized the fact that more is required of a foreman today than ever before in efficient conduct of work—more elaborate records, greater attention to safety and ability to read plans. This requires that greater care be exercised in the selection of men from whom foremen must be chosen. F. W. Hillman (C. & N. W.) urged that supervisors talk their work over with their foremen frequently, to show them that their supervisory officers were interested in them. He also advocated giving these men every opportunity to develop initiative. E. C. Neville (Can. Nat.) stated that the distribution of copies of a railway maintenance publication among his men has enabled him to detect those that showed the greatest interest in their work and presented the best men for promotion.

Inspection and Maintenance of Track Scales

The report of the Committee on the Inspection and Maintenance of Track Scales, of which E. Kent Lawrence, general scale inspector of the Baltimore & Ohio, was chairman, favored the installation of track scales by company forces. It also confirmed the experience of the United States Bureau of Standards, that, regardless of design, nearly all scales can be kept in correct weighing condition if they receive the necessary inspection and maintenance. However it pointed out that, in many cases, the cost of maintenance would be prohibitive and that the economical solution of the problem is the replacement of scales with others of approved design to meet the particular requirements.

For the proper inspection and maintenance of track scales, the report continued, the first requirement is a trained organization. Results cannot be obtained if the work is left in the hands of those without fundamental knowledge of scale construction and operation. For efficient inspection and economical maintenance, all parts of the scale should be accessible. The pit should be easily accessible, waterproof, well lighted, ventilated

and should have good drainage. To obtain these results, the supervising officer should pass on all plans.

The construction of the scale should be under the supervision of a competent scale inspector or scale builder. The best results can be obtained by constructing the scale with company forces, rather than by contract.

The scale inspector should inspect and test scales at regular intervals, not to exceed 90 days. Weekly or more frequent inspections and prescribed tests should be made by the weighmaster or other authorized party having a general knowledge of scales and their operation. The inspection of scales by the scale inspector should include the following features:

Tracks; condition of ties, rails, joints, switches, line and surface, clearance between scale and approach rails (which should be between limits of ½ in. and ¾ in.) and condition of easer rails.

Deck; general condition as to cleaning, physical condition, clearance about dead structure, if it has a floating deck, or movable scale parts if of rigid construction.

Weather or Dirt Shields; physical condition; clearance between dead and live parts.

House; general condition as regards care and orderliness; physical condition.

Scale Pit and Foundation; general condition, care and cleaning; physical condition, drainage, lighting and ventilation.

Steel Superstructure; General condition care and cleaning; physical condition; clearance between fixed and movable parts, with a limit of not less than ¾ in.

Checks; physical condition; adjustment.

Scale Lever Stands; stability and immobility.

Scale Levers; condition of pivots and bearings; relative position of pivots and bearings; binds, levers or pivots; level and alinement of levers; plumb connections.

Weigh Beam; binds; level; wear in notches; cleanliness and legibility of markings.

Poise; free running; seating in notch when released; wear of dog.

Type-Registering Beam; condition of type and type bar; condition of recording mechanism.

The report was concluded with a detailed outline for the conducting of scale tests and inspections.

Discussion

W. T. Krausch (C. B. & Q.) stated that it is the practice of that road to have the local division bridge and building supervisor participate in scale inspection, to avoid the division of responsibility.

Elimination of Accidents to Men Working Off the Ground

While endorsing the work carried out by what are known as "Safety First" organizations, the Committee on the Elimination of Accidents to Bridge and Building Men While Working off the Ground sounded a word of warning in the prosecution of such measures. According to this committee, of which W. R. Roof, bridge engineer, Chicago Great Western, was chairman, "Safety First" organizations can be overdone. Too frequent meetings where discussions of previous meetings are rehashed, cause loss of interest among listeners and readers of reports of the meetings. Change of subjects and of speakers will arouse the interest of the listeners or readers.

A further method suggested by the committee for arousing the interest of the workmen is to get up a safety competition among the various bridge and building gangs. A very simple, workable, and effective method is to send frequent messages to each foreman, advising him of the number of days which he has to his credit without a reportable accident. The interest may be further stimulated by the award of medals, cups, or plaques of bronze or some similar metal to the gangs having the best and longest records.

The report also offered detailed suggestions covering clothing, the condition of tools, the wearing of goggles, the physical condition of the men and gave special attention to work on scaffolds, the dismantling of old structures, etc., from which the following was abstracted:

The foreman in charge of structures to be dismantled should be familiar with the function of each part of the structure and what the results would be, following the sudden removal or displacement of it. He should know how and where to support partially dismantled work. Each scaffold should be constructed of material of sufficient strength to carry its intended load and must be securely fastened together. Foot planking should be free of knots, straight grained, and lay in a true plane. Excess tools and material should not be placed upon the scaffolding. Wherever possible, toe boards of sufficient height should be installed on the floor boards to prevent tools from rolling off.

Workmen should exercise care in passing each other on scaffolds and they should give freedom of passage to workmen engaged in work. Jacks should be lashed to the fixed structure while in use and while not in use. The foreman in charge should be made directly responsible for the safety of scaffolds together with the ropes, slings, etc., used in its handling. If there is any doubt in the mind of the man in charge that the scaffolding or any part of it is not of sufficient strength, he should not, under any circumstances, permit any of his men to work upon it. The man in charge should pick out the men best qualified to erect and work upon scaffolds.

There is nothing safer than the "plain timber hitch" if properly made. When a chain is used, it should be what is commonly called the "timber chain" with a slip hook. The use of timber hooks should be discouraged and cable slings, rope slings, or a good chain with slip hooks should be substituted. In the placing of steel work, proper girder clamps may be used in safety. Cable slings may also be used with safety if burlap or other similar material is so placed as to prevent the cutting of the cable on sharp corners.

The workmen should ever be watchful of their positions so as not to be under moving or suspended loads. The operator of the machine must be alert, clear headed, of keen perception in order to carry out signals correctly at all times, and especially so in an emergency. He must understand his machine thoroughly—what it will do and what it will not do. The man in charge should give his signals so as to prevent the moving load from striking a part of the fixed structure and if it should be necessary to do this, he should warn his men in advance as to what is about to happen. Any machine in use should be equipped with such safety devices as will meet the requirements of the National Safety Council.

Discussion

Numerous members supplemented this report with verbal discussions of further precautions to avoid accidents, including substitution of cables for chains, nailing all footboards on scaffolds, discarding of unsafe tools, etc. F. C. Baluss (D. M. & N.) called attention to the fact that bridge and building men bid fair to achieve the American Railway Association goal of 35 per cent reduction in accidents by 1930, as compared with 1923.

Protection of Underground Pipe Lines from Deterioration

Following is a brief abstract of the report of the Committee on the Protection of Underground Pipe Lines from Deterioration, of which W. E. Pierce, supervisor of water service, Delaware & Hudson, was chairman.

Although the subject of protecting underground and overhead pipe lines against corrosion has engaged the attention of water-service men for many years, it is estimated that the average service life of pipe lines in railway service throughout the country is less than 70 per cent of their potential life, if full protection were provided against corrosion. Since the present installations of wrought iron and steel pipe lines that are being maintained by the engineering department exceed 110,000,000 lin. ft., in addition to more than 57,000,000 lin. ft. of cast iron pipe, the protection of these lines against corrosion becomes of major importance.

It should be borne in mind that the success of any method

which may be selected will depend in large measure upon the condition of the pipe at the time the protection is applied. Among other things, corrosion should not have progressed to the point where the safety of the pipe line or its usefulness is already impaired. Before the protection is applied, the surface must be free from scale, dust, dirt, oil and other foreign matter.

Numerous materials in the form of paints are on the market, which are satisfactory when used above ground, but which do not give permanent protection to underground lines. Red lead is an example of this type. In many applications above ground it gives almost complete protection when used with an outer coat of suitable paint. Used on underground lines, it immediately absorbs water and loses its adhesive qualities, with the result that it soon loosens from the pipe and fails to afford any protection.

Tar paper and tar or asphalt-saturated felt and prepared roofings have been used frequently to cover pipe lines, under the mistaken impression that they afford protection. Nothing could be more erroneous. These materials cannot be made to adhere to the pipe and, consequently, do not have any protective value. Used in combination with other materials and methods, they may, however, have a high value.

Protective compounds made from an asphalt base have been used with excellent results in many cases while in others they have failed to give satisfaction. In general, they must be protected from abrasion, this protection being best afforded by covering the treated pipe with a good quality of heavy roofing felt. In some instances, the presence of certain salts in the soil causes sufficient physical change in the coating to render it useless, since the bond becomes broken, allowing moisture to enter and start corrosion.

One type of protective coating, which is non-hardening, has given excellent results under a wide variety of conditions when applied to pipes other than those that serve in hot water or steam lines. This type can be applied, probably, more easily under field conditions than any other that is commonly used. It is applied directly to the pipe after it is laid in the trench. There is a tendency, however, for the coating to shift to the bottom of the pipe, particularly in warm weather, so that the pipe should be inspected and touched up wherever necessary, immediately before the trench is backfilled.

This type of protective coating can be used with a canvas wrapper when the pipe must be handled frequently; when the pipe is laid in cinders, broken stone or other rough, sharp materials; where there may be movement of the pipe in the soil; or where other forms of abrasion are likely to occur. Where non-hardening coatings are applied, the soil seldom adheres to the pipe and, in almost any clay, if the seal is broken, the coating will close before corrosion has had a chance to get started. The cost of these coatings applied is about the same as for paints. Some of these materials have the added advantage that they not only prevent rust but they arrest the further progress of corrosion which is already under way.

A plan which has been tried, and which may be quite successful in preventing corrosion, is that of embedding the pipe line in concrete. The cost is prohibitive under the conditions usually met in railway service, and so much care is required to insure that the encasement is made properly, that this method cannot be recommended except where the conditions are unusual and the importance of the line will warrant the expense. In any case this construction cannot be used in alkali or highly acid soils.

A much cheaper and better form of construction is the clay tile conduit. At least two manufacturers are producing tile conduits which are giving satisfaction under a wide range of conditions. While they are designed primarily for the protection of the pipe insulation which is used on hot water and steam lines, they can also be used as a housing for cold water and air lines. While clay tile conduit is satisfactory under most conditions, it cannot be used successfully under tracks. Here the material should be cast iron, which not only provides ample strength to resist the pressure and the strains caused by vibrations, but is highly resistant to corrosion.

A form of protection which has a limited application is the encasement of the pipe in sludge from a lime-and-soda ash water treating plant. When this method is followed, it is important that a sufficient depth of sludge be placed in the bottom of the trench to insure that the pipe will be completely surrounded.

Under the most favorable conditions, the protection of underground pipe lines is difficult and the cost is frequently high. From the very nature of the construction it is not possible to know currently what results are being obtained. Since this is true of every underground pipe which has not been placed in pipe galleries of sufficient size to permit inspection of the entire line, this committee recommends that, whenever it is possible to do so, pipe lines be located above ground. Many railways are wasting annually, through undiscovered water and air leaks, as much or more than the insulation of that particular pipe line or system of lines would cost if placed above ground. The placing of such lines above ground keeps them in constant view, and enables inspection and maintenance to be made at any time at a minimum of expense.

Economy of Concrete Mixes and Tests for Concrete Aggregate

It was the purpose of the report of the Committee on the Relative Economy of Concrete Mixes and Practical Tests of Concrete Aggregates, of which F. H. Cramer, assistant bridge engineer, Chicago, Burlington & Quincy, was chairman, to set forth the sources of savings and the means of their appraisal, as stated below:

Three Factors Involved

The study of the relative economies of like concrete mixes is concerned with three major variables, namely: (1) the price at origin; (2) transportation; (3) yield. A fourth, but less important element, is the cost of unloading by hand shoveling, and relates only to the difference in such cost as between gravel and crushed stone or slag. These three variables affect cement and both aggregates, except that in the matter of yield the difference between brands of cement is trivial. The cost at origin is always known, but the transportation cost is often ignored, although it represents an important part of the total material cost.

To the price at origin plus transportation should be added the unloading cost, because it seems most logical to consider material as delivered only when laid down in job storage, viewing unloading as the last step in the general transportation service and, therefore, a part of the cost of the materials. The materials found most economical in producing a mix of given characteristics at any particular point will probably prove cheapest for other mixes there but the saving for any kind of mix can be found only through actual trial batches.

Influence of Purchasing Methods

It should be pointed out that present methods of purchase have certain inherent evils. The purchase of sand or other fine aggregates by volume results in frequent and wide variations due to the bulking effect of contained moisture. Moisture plays a small part in the bulking of the usual coarse aggregates but there are marked differences in the amounts of solid matter contained in commercial volumes of different materials. A well graded gravel and a badly graded crushed stone are fair examples of the two extremes. Purchase by weight at origin offers an incentive to sell as much water as possible at aggregate prices.

Purchase by weight at destination not less than 24 hours after loading, although disregarding differences in specific gravity would be better but it would be restricted to stations having track scales. The only usable part of the aggregate is the solid matter; the voids make no contribution toward concrete yield. The ideal basis of purchase would be that of a price per unit of solid matter. Whether this may ever be accomplished is a question deserving study by this association. Inseparable from the study of relative economies is the design of mixes for definite strengths and workabilities. Comparison on any basis other than like traits mean nothing.

Following this, the report presented a detailed routine for determining the most economical mix according to the law of the water-cement ratio, and a method of determining the cost of the materials required for such a mix.

Practical Tests

It is as necessary to test the aggregate for mortar or concrete as it is to test cement. Sand and stone for all classes of work should be tested in a well equipped laboratory and the tests should be made before any aggregates are purchased.

All materials should be checked for uniformity as delivered, and sand should be tested regularly as construction work progresses. Samples of sand and gravel or stone from commercial plants should be taken from the bins or storage piles. No sand and gravel or stone should be sampled as separate units

and shipped in that order. Samples of bank run gravel should consist of at least 100 lb. of material, samples of sand should contain at least 20 lb. of material, and samples of gravel or stone should contain at least 50 lb. of material.

After establishing by test the suitability of sand and stone for any desired grade of concrete, it is necessary to see that the size, grading, and proportions of these materials are reasonably constant, to insure uniform quality. The regular and systematic testing of the size of the aggregates gives data that shows, without further tests, whether the aggregates will produce a better or a poorer concrete than that produced by the original or standard sample. Indications of a particular rock's durability may be obtained from an examination of the quarry or the stock pile. Estimate the amount of weathered rock debris at the foot of the quarry face or the amount of disintegrated material in the stock pile, comparing these findings with the length of time exposed, the severity of weathering and with other aggregates, the sources of supply of which are known to be good.

The rest of the report was devoted to the description of methods of making practical tests of aggregates.

Discussion

Several members described how they are now securing better concrete more economically by studying the proportions of their materials more closely, and thereby getting more concrete from a given quantity of cement.

Reducing the Cost of Maintaining Small Stations

In its approach to the subject of Reducing the Cost of Maintaining Roadway Buildings and Small Stations, the committee took the position that anything which increased the efficiency of bridge and building work would be a means to this particular end. The report, therefore, relates primarily to methods designed to increase the general efficiency and economy of the department's work. The chairman of this committee was F. W. Hillman, assistant engineer maintenance, Chicago & North Western. A brief abstract follows:

Much can be said on the question of doing work by contract. While the replies to an inquiry show that a number of the railroads do contract work, the general opinion seems to be adverse to the practice for maintenance work. Frequently jobs are of such an indeterminate nature that they are hard to let by contract. On the other hand, special equipment may be required which would make contracting advisable. After all has been said, the possibilities of contracting maintenance jobs should not be overlooked, particularly specialized work, such as gutters and down spouts, plumbing, heating and possibly electrical and gas engine jobs.

If, after the nature of the work to be done is thoroughly understood, it is decided to do it with company forces, the first requisite for a good start is to order the material properly. This means that proper descriptions must be given. Frequently, great benefit will accrue if notations are made on the order that certain substitutions may be made. Then, too, sufficient time should be given for delivery, stating as far as possible the desired date of delivery. Rush orders requiring special purchases cannot be avoided entirely but can be curtailed if sufficient foresight is used.

It frequently happens that material must be secured at once and in such cases it is possibly advisable to permit some responsible maintenance department employee to make local purchases. This practice, however, must be very wisely handled and not abused. Too much freedom with such authority may result in careless ordering of material and uneconomical buying by those not versed in purchasing. Generally permission can be obtained from the purchasing agent for rush local purchases.

Very careful thought should be given to the use of reclaimed or usable material. A large amount of very good lumber is obtained from condemned cars, which can be used to good advantage in a number of structures. It is obviously poor economy to use new material in patching or repairing a structure which has only a few years of life and will soon be entirely rebuilt.

Standardization is a great aid in the promotion of economy as fewer kinds of supplies or materials need be carried in stock and a better supply of those required can be carried without unduly enlarging the stock account, thereby insuring more prompt delivery. However, too strict adherence to standards may preclude the adoption of some new material or device. Moreover, local conditions must be considered. Some localities require a special type of construction owing to variations in climatic conditions. Hail storms, for instance, require a special type of roofing. Purchasing costs must also be considered. In some localities wood shingles can be secured cheaper than other kinds of roofing, and cast iron pipe cheaper than concrete or corrugated metal pipe, or vice versa.

The use of alloy metals is developing quickly. In many instances the usual metals deteriorate very rapidly. A little added first cost for an alloy material may result in greatly increased life and reduced maintenance cost.

Care should be taken to secure the best material available for the nature of the job to be done; that is, consideration should be given to whether the work is temporary or permanent. Cheap materials may be justified for temporary structures but for permanent work cheap material is almost always costly in the end.

There is nothing more exasperating to supervisory officers than to receive advice that some defect was overlooked or that a repair recently made is not functioning properly and must be attended to again. "Haywire" repairs are always costly and uneconomical. Do the job properly.

The question of service and costs presupposes the analysis of the work after it is completed. Too often a job is hastily and inadequately done and promptly forgotten. It is valuable to reflect on what has been done and make a record of its cost in order to see if there is something in the procedure which might be improved and lead to more economical performance of the next similar job.

Most railways have some system of periodic inspection on which repairs to be made are listed or scheduled. Estimates are made and submitted to the management, preliminary to securing approval of the work and appropriations therefor. When a schedule is approved the programming of the work authorized is vital. A program is of no value, however, unless it is followed up to see that it is carried out as closely as can be.

There is nothing which makes for efficiency and consequent economy of effort like high morale and team work, which presupposes confidence. These can be secured only by high class supervision, which requires personal contact. Too often supervision is considered as requiring only the giving of orders and that by correspondence. That such an idea is absurd need hardly be mentioned. Men want to see the boss, not only to receive orders and instruction, but because they like to know that some officer is interested in them and their work. If men think that no one is interested in them, they cannot be expected to be interested in what they are doing and are likely to contract a careless attitude, which is a positive enemy of economy. Frequent contact with the field forces gives an opportunity for checking up on the work, the discussion of how it should be done, and the exchange of ideas, which are always helpful. It also affords an opportunity to discuss such important subjects as safety, the conservation of materials and co-operation, all three of which, when properly observed, are important factors contributing to economy.

Discussion

Discussion of this report was confined principally to the merit of contracting small repair work. A. I. Gauthier (B. & M.) described the practice followed on that road of contracting small building repair work to local artisans, with economy and dispatch, under an arrangement whereby the agent communicates direct with the division building supervisor regarding work to be done and secures authority from him to have it done locally.

Wearing Surfaces for Passenger and Freight Platforms

The report of the Committee on Wearing Surfaces for Passenger and Freight Platforms, of which William Cardwell, supervisor of bridges and buildings of the Washington Terminal, was chairman, was devoted primarily to the platforms of large freight stations, in which heavy trucking is an important factor in the service rendered by the surfaces. The portion of the report devoted to such platforms as well as to the plat-

forms of large passenger stations is abstracted below:

Platforms for the handling of freight at receiving and delivery stations in the large centers of population and the l. c. l. transfer stations, which are increasing in number and size constantly, require surfacing materials capable of resisting the wear of a continuous stream of trucks.

The materials suitable for this type of platform are named below in the order of their importance as indicated by the extent of their use by the various railroads of this country and Canada.

1. Concrete, with or without hardener.
2. Asphalt, either preformed or poured in place.
3. Wood, in the form of either blocks or planks.

Concrete Wearing Surfaces

Many floors have been constructed of Portland cement concrete either with or without the addition of a metallic or chemical hardener and many railroads report good results from this material. The proper provision in the design for expansion and contraction due to temperature variations and proper drainage of the sub-floor should make this type of floor independent of weather conditions and therefore attention should be concentrated on getting a surface with the highest possible resistance to wear.

A concrete floor offers less resistance to the passing of wheels than any other so long as it remains smooth, by reason of its hardness. This may at first suggest a condition conducive to fatigue on the part of those having to walk over it. However, it seems that this is not as bad as has been assumed in the past, and furthermore, the increase in the use of tractors is reducing the amount of walking that need be done.

The cost of a concrete wearing surface is probably less than that for any other of equal permanence. In many cases, the only increase over the cost of the sub-floor is that of the troweling. If the necessity for repairs should arise, however, the cost per year, as well as the annoyance of continued interruption of traffic, may very well be increased considerably, and since very much depends upon the quality of workmanship secured in the placing of the floor, and its final quality is not known until too late to change, this factor is very important. Owing to the difficulty of securing a satisfactory bond between old and new surfaces, repairs are hard to make and of doubtful permanence. These factors are probably responsible for the fact that in spite of the lower cost of concrete wearing surfaces, many roads are using other types of construction, or are using some of the various types of hardeners which are now available.

These hardeners are available in three common forms, metallic, chemical for integral application, and chemical for surface application. It is the conclusion of the committee, however, that for freight platforms metallic hardeners are beneficial but that no others are of sufficient efficiency to justify their use.

Asphalt

The use of asphalt products for floors seems to have become quite general and they have some advantages which make their use in freight platforms advisable. They are divided into two general classifications, preformed and poured in place.

The poured-in-place form, known generally as mastic is delivered to the job in the form of blocks, where it is melted down with a flux, and spread upon the sub-floor. Having no structural strength, it requires a sub-floor capable of taking the stresses induced by whatever loads are imposed upon them. The materials are composed either of a mineral aggregate, which should be carefully graded, mixed with a manufactured asphalt binder, or a natural rock asphalt. There does not seem to be any distinguishable difference, so far as resistance to wear is concerned, between the two types.

This form has had a very extensive use for many years and has given very good service. The manner in which it fails, when it does fail, by rolling up under traffic, indicates a feature which must be very carefully provided against. This is the possibility of the consistency being such that the surface will be too soft. In addition to the possibility of final failure from this cause this condition will be a constant source of irritation due to the increased resistance to trucking that results.

There are many forms of unit Asphalt paving on the market today and they may all be placed in two classes, both as determined by the shape and by material characteristics. One is in the form of bricks, made of either a natural rock asphalt or an asphalt-impregnated mineral aggregate. The other is in the form of planks, generally made of a felt or other fibrous base impregnated with asphalt.

These preformed asphalt units are made in the factory under laboratory control and the material therefore may be assumed to be as near perfect as may be and will remain so during installation, which, of course, consists only of placing. Another point to be considered is that the units are formed under high pressures and are therefore more dense than could possibly be the case when rolling is the only means of compression.

While these features may have some bearing on the performance of the floor this fact has not yet been definitely determined by usage since the preformed types of floor have only recently come into anything like general use and definite conclusions based on performance are not yet possible. The nature of the materials used in these products is such that the units will weld together under traffic and make a wearing surface which is impervious to water over its entire area. The surface is not slippery and provides sufficient adhesion for traction.

Wood Floors

Wood was the material with which the bridge and building forces first became familiar and it still remains one of the most useful materials in the construction and maintenance field. It is used in the form of planks with the grain parallel to the surface and in blocks with the grain perpendicular to the surface. A variation of the former is what is known as edge grain where the boards are sawed in such a manner as to bring the annul rings perpendicular to the surface when laid. The most common forms of lumber for use as a wearing surface on platforms where the wear is severe are maple boards and fir or yellow pine blocks. Some roads report the use of edge grain fir with good results.

The open nature of a floor of wood boards prompts the thought that they should not be chosen for locations exposed to the weather. There are too many places for moisture to collect and remain long enough to promote rot.

Wood blocks are made in two principal forms, those which come loose and are laid in the floor much as bricks are laid, and those which come already fastened to boards in long length and are nailed and splined together as they are laid upon the floor. These two forms present identical surfaces when finished, that of the end of the grain. They are made of creosoted fir, yellow pine and redwood. They form a wearing surface that is satisfactory for trucking, not hard on the feet and not slippery.

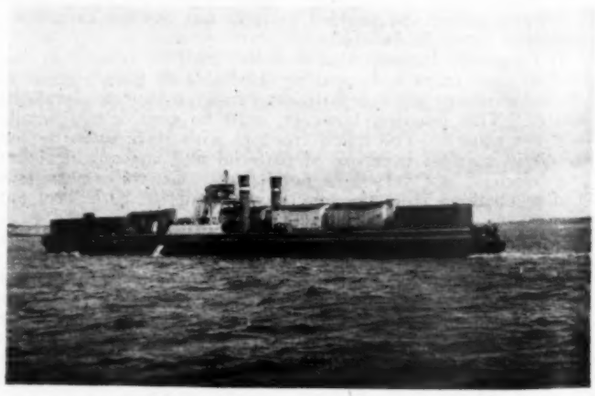
The maintenance of these two types of floor should not present any insurmountable difficulties to bridge and building forces. Of the two types the individual wood blocks should be the easier to repair or renew. Here again the committee feels that the use of wood should be confined to places where it will be protected from rain and snow, owing to the danger of swelling and buckling.

Passenger Platforms

For the exterior platforms at the larger stations brick seems to give the most satisfaction. It has a very good appearance, wears well, is easily repaired when necessary, has a good salvage value when changes require removal and stands the shocks of baggage dropped on it without material damage. For the platforms in large passenger terminals where a satisfactory foundation can be provided, asphalt mastic has given very good service. In such installations an additional factor enters into consideration. This is the absence of noise.

Portland cement concrete makes a very good platform, as is evidenced by its use in one of the newest and largest terminals of the country, but it is not so quiet as asphalt mastic and has one feature that must be guarded against where it is used outside, the glare from reflected sunlight.

* * *



A Car Ferry on the German Railways

The "Greater Wabash" Plan from a Traffic Standpoint

Analysis of comparative distances via proposed system and its probable service and traffic characteristics

By F. J. Lisman

F. J. Lisman & Company

IN railroad circles, the status of the Wabash in nation-wide consolidation plans is generally looked upon as a particular puzzle on account of its lines being astride of the gateways between the east and west—that is, the cities of Chicago and St. Louis. As a matter of fact, the Wabash is far from being the only railroad crossing the dividing lines between different sections of the country.

The Illinois Central actually has lines in five different sections. Its main line between Chicago and New Orleans crosses the Ohio river gateway. Its western lines to Omaha, Sioux City and Sioux Falls and entering southern Wisconsin and Minnesota occupy a part of the northwestern territory. Its Shreveport division enters southwestern territory; its Indianapolis division is in the central traffic territory, while its wholly owned Central of Georgia, not only penetrates the southeast, but with its dependent Ocean Steamship Company, actually enters the ports of New York and Boston.

Similarly, the Rock Island-St. Louis-San Francisco combination covers territory extending from Minnesota and South Dakota in the north to Texas and New Mexico in the southwest and to Florida, Alabama and Mississippi in the southeast. The Chicago, Milwaukee, St. Paul & Pacific, not only extends from Chicago to the Pacific, but also has a line to the southern Indiana stone district which almost reaches the Ohio river. The Southern Pacific, extending from Oregon through Texas to New Orleans, reaches New York and the other eastern seaboard cities with its steamship lines.

Strategic Position

It is rather a compliment to the Wabash's strategic position and management that it is associated in people's minds with this particular problem because it proves that the lines undoubtedly cut an important figure in carrying a large portion of interterritorial traffic.

The efficiency of the Wabash as a transportation system is due, not so much to the fact that it is the only railroad which has lines both from the east and west into the cities of Chicago and St. Louis, but because it has a through line from Omaha and Kansas City to the east which avoids both of these congested gateways. This refers to its line crossing the Mississippi river at Hannibal and extending thence eastward through many manufacturing points of importance in Illinois and Indiana, direct to the cities of Detroit and Toledo.

The strength of its position in this respect is proven by the fact that it is the shortest line between Kansas City and Toledo and Kansas City and Detroit, by about 75 miles; in fact it is also the shortest line between St. Louis on the west and Detroit and Toledo on the east, by about 20 to 30 miles.

Table of Distances

From Kansas City to Toledo, N. Y. C., via St. Louis	774 miles
From Kansas City to Toledo, Pa. R. R., via St. Louis	741 miles
From Kansas City to Toledo, Wabash	664 miles
From Kansas City to Detroit, N. Y. C., via St. Louis	831 miles
From Kansas City to Detroit, Pa. R. R., via St. Louis	797 miles
From Kansas City to Detroit, Wabash	715 miles
From Kansas City to Cleveland, N. Y. C., via St. Louis	818 miles
From Kansas City to Cleveland, Greater Wabash	784 miles
From Kansas City to Pittsburgh, Pa. R. R., via St. Louis	894 miles
From Kansas City to Pittsburgh, Greater Wabash	881 miles
From Kansas City to Buffalo, N. Y. C., via St. Louis	1000 miles
From Kansas City to Buffalo, Wabash	957 miles
From Kansas City to New York, Pa. R. R., via St. Louis	1322 miles
From Kansas City to New York, Greater Wabash	1379 miles
From Kansas City to Boston, N. Y. C., via St. Louis	1497 miles
From Kansas City to Boston, Greater Wabash	1509 miles
From St. Louis to Toledo, Pa. R. R.	459 miles
From St. Louis to Toledo, Wabash	436 miles
From St. Louis to Detroit, Pa. R. R.	515 miles
From St. Louis to Detroit, Wabash	488 miles
From St. Louis to Cleveland, N. Y. C.	536 miles
From St. Louis to Cleveland, Greater Wabash	557 miles

As the Wabash, up to very recent years, had not endeavored to compete for high class passenger traffic, few people realize the advantageous location of its lines between a number of important western cities:

Table of Distances—Passenger Service

From Omaha to St. Louis, Mo. Pac.	491 miles
From Omaha to St. Louis, C. B. & Q.	458 miles
From Omaha to St. Louis, Wabash	414 miles
From Kansas City to St. Louis, Mo. Pac.	282 miles
From Kansas City to St. Louis, C. B. & Q. and C. & A., Joint	279 miles
From Kansas City to St. Louis, Rock Island	296 miles
From Kansas City to St. Louis, Wabash	286 miles
From St. Louis to Chicago, Alton	284 miles
From St. Louis to Chicago, Ill. Central	294 miles
From St. Louis to Chicago, C. B. & Q.	290 miles
From St. Louis to Chicago, Wabash	279 miles

Proposed Greater Wabash System

Under the application for a "Greater Wabash System" now before the Interstate Commerce Commission, the lines which it is proposed to merge constitute a very complete and comprehensive system, able to compete as to distance and grades between practically all points of importance. Its Chicago-Detroit-New York line would be about the same length as that of the New York Central, but with one heavy grade in Pennsylvania, south of Wilkes-Barre. It would constitute about as favorable a line between Chicago and Pittsburgh as its competitors and actually would provide the shortest line from either Chicago or Pittsburgh to Baltimore.

Table of Distances

From Chicago to Toledo, N. Y. C.	233 miles
From Chicago to Toledo, Wabash	233 miles
From Chicago to Detroit, N. Y. C.	267 miles
From Chicago to Detroit, Wabash	272 miles
From Chicago to Pittsburgh, Pa. R. R.	468 miles
From Chicago to Pittsburgh, Wabash	468 miles

From Chicago to Buffalo, N. Y. C.	503 miles
From Chicago to Buffalo, Wabash	513 miles
From Chicago to Baltimore, B. & O.	803 miles
From Chicago to Baltimore, Pa. R. R.	797 miles
From Chicago to Baltimore, Wabash	770 miles
From Chicago to New York, Pa. R. R.	895 miles
From Chicago to New York, Wabash	961 miles
From Toledo to Pittsburgh, N. Y. C.	246 miles
From Toledo to Pittsburgh, Pa. R. R.	260 miles
From Toledo to Pittsburgh, Wabash	234 miles
From Detroit to Pittsburgh, Pa. R. R.	316 miles
From Detroit to Pittsburgh, Wabash	302 miles
From Detroit to Philadelphia, Pa. R. R.	664 miles
From Detroit to Philadelphia, Wabash	656 miles
From Detroit to Baltimore, Pa. R. R.	645 miles
From Detroit to Baltimore, Wabash	604 miles
From Detroit to New York, N. Y. C.	660 miles
From Detroit to New York, Wabash	688 miles
From Pittsburgh to Baltimore, B. & O.	324 miles
From Pittsburgh to Baltimore, Pa. R. R.	328 miles
From Pittsburgh to Baltimore, Wabash	304 miles

If the Wabash had the advantage of one management from its western termini to the Atlantic Coast, it could give the shipping public better service by eliminating transfers at such important gateways as Buffalo, Toledo, Pittsburgh, etc.

The "Greater Wabash System" as planned, would have a direct line from Buffalo to Philadelphia and New York, etc., and, on its own rails, would carry coal from the Pennsylvania and West Virginia fields to New York City and New England gateways, in turn bringing back the manufactured products of the eastern region to and through the Buffalo and Pittsburgh gateways. It would also be a coal carrier of Pennsylvania, Ohio and Illinois coal for its western division.

On northwestern business it could avoid the congestion of the Chicago gateway by its Ann Arbor Division, with its car ferry across Lake Michigan.

In Chicago, the Wabash is part owner of the valuable Chicago & Western Indiana and Chicago Belt Terminals, and the proposed acquisition of the Elgin, Joliet & Eastern would give it excellent facilities for exchange with all roads running from Chicago westerly and northerly, besides giving it direct access to the important manufacturing cities of Waukegan, Aurora and Joliet. The ownership of the present Toledo, Peoria & Western would afford it access to the important city and gateway of Peoria while, as previously mentioned, the through traffic to and from Kansas City, Omaha and Des Moines would avoid all congested terminals. It is interesting to note that on business from Kansas City to Pittsburgh, every point of congestion is avoided.

The east and west bound traffic of the Wabash would be as well balanced as that of any other system; its operating ratio should be no higher than that of its competitors.

Not only would the movement of traffic be expedited by the merger of the various lines, but great economies in operation could be effected, very much along the line of the economies which the New York Central expects to inaugurate by the perpetual lease or, in effect, merger of its subsidiaries, the Michigan Central and the Big Four lines.

There is the matter of consolidation of shops; yards; terminals; checking at junction points; standardization and unification of types of equipment, etc.; and the main tracking of through freight trains over long distances—all of which should mean several million dollars of economies when effectuated, and which would bring benefits to the shipping public, either in the way of better facilities and improved service or, possibly, even of lower rates in the course of time.

The showing of operating efficiency set forth in the company's application to the I. C. C. is extremely creditable and, spread over the "Greater System," would bring about quite remarkable results for the shipping public and the stockholders.

Surely the proposed "Greater Wabash" as an efficient transportation system, may be deemed as coming within the intent of the 1920 Transportation Act, which requires that the various systems be approximately equally balanced as to transportation costs, efficiency, earning capacity, etc.

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading in the week ended October 5 amounted to 1,179,047 cars, a reduction of 23,064 cars as compared with the loading in the week before but an increase of 7,985 as compared with the corresponding week of last year. It was also an increase of 76,053 cars as compared with the corresponding week of 1927. All districts except the Allegheny, Southern and Northwestern reported increases as compared with the corresponding week of last year and all except the Southern showed increases as compared with 1927. Loading of coke, ore, merchandise and miscellaneous freight was greater than that in the corresponding weeks of 1928 or 1927, while loading of grain and products, livestock, and forest products showed decreases as compared with both years. The summary, as compiled by the Car Service Division of the American Railway Association, follows:

Revenue Freight Car Loading

Week Ended Saturday, October 5, 1929

Districts	1929	1928	1927
Eastern	262,475	262,382	240,500
Allegheny	231,305	236,886	215,203
Pocahontas	63,370	61,918	62,243
Southern	151,747	161,883	162,355
Northwestern	180,391	185,159	168,782
Central Western	188,250	181,622	171,164
Southwestern	101,509	97,182	82,747
Total Western Districts	470,150	463,963	422,693
Total All Roads	1,179,047	1,187,032	1,102,994
Commodities			
Grain and Grain Products	49,525	57,601	50,022
Live Stock	36,151	38,575	38,689
Coal	205,678	207,645	191,208
Coke	12,023	10,947	9,462
Forest Products	60,654	65,281	65,034
Ore	65,908	61,406	52,482
Merchandise L.C.L.	273,022	271,584	272,096
Miscellaneous	476,086	473,993	424,001
October 5	1,179,047	1,187,032	1,102,994
September 28	1,202,111	1,196,965	1,126,903
September 21	1,166,336	1,144,131	1,126,402
September 14	1,153,062	1,138,060	1,127,643
September 7	1,017,072	991,385	989,799
Cumulative total, 41 weeks	41,058,633	39,411,794	40,275,748

The freight car surplus for the last week in September averaged 118,523 cars, a decrease of 13,327 cars in a week. The total included 72,612 box cars, 12,117 coal cars, 18,897 stock cars and 7,530 refrigerator cars.

Car Loading in Canada

Revenue car loadings at stations in Canada for the week ended October 5 totaled 79,432 cars a decrease of 6,158 cars from the previous week and a decrease of 10,267 cars from the same week last year.

	Total Cars Loaded	Total Cars Rec'd from Connections
Total for Canada		
October 5, 1929	79,432	43,300
September 28, 1929	85,590	41,400
September 21, 1929	84,105	40,665
October 6, 1928	89,699	42,041
Cumulative totals for Canada		
October 5, 1929	2,739,161	1,644,675
October 6, 1928	2,719,416	1,570,147
October 8, 1927	2,496,120	1,503,842

Consolidation and Waterways Chief Topics Before Traffic Clubs

Semi-annual meeting of Associated Traffic Clubs at St. Louis attracts attendance of nearly 550

RAILROAD consolidation and the development of inland waterways formed the major subjects to which speakers addressed themselves at the semi-annual meeting of the Associated Traffic Clubs of America at the Jefferson hotel, St. Louis, Mo., on October 15 and 16. Attention was also given to the forms of transportation now allied to the railways—motor highway operation and aviation.

Nearly 550 members of 30 traffic clubs and visitors registered at the various sessions of the meeting, and more than 1,000 persons were present at the banquet on Tuesday night, which was given under the auspices of the Traffic Club of St. Louis.

The Consolidation Problem

The discussion of the consolidation problem was initiated by William H. Williams, chairman of the board of the Missouri Pacific and the Wabash, through his address on that subject. Mr. Williams characterized the tardiness with which consolidations have been effected in the 10 years since the passage of the Transportation Act of 1920 as due, not to indifference on the part of the Interstate Commerce Commission or on the part of the carriers themselves, but to a commendable reluctance on the part of the Commission to go forward incautiously upon a program involving great economic readjustments.

"The Commission has refrained from adopting a final plan of consolidation and has formally asked Congress to relieve it of the duty to adopt such a plan," he continued. "Congress has not complied with this request and it is now generally understood that the Commission will prepare a final plan and publish it before the end of the year. It is apparent, however, that such a plan will have no true quality of finality or permanency.

"Until the Commission adopts a plan it will not be practicable under existing legislation to consummate any scheme for the complete consolidation of two or more carriers for ownership and operation, as the Act expressly provides that consolidation must be in harmony with and in furtherance of the final plan. Notwithstanding this statutory inhibition against complete and final consolidation for ownership and operation, it is quite practicable under another provision of the same statute to effect a system grouping, which secures to the carriers concerned and to the public many of the economies and other benefits of consolidation."

Mr. Williams referred to the applications filed with the Commission by the Baltimore & Ohio, explaining that they contemplated approval of a plan agreed upon by that railway, the Nickel Plate and the New York Central for the division of the railways in Eastern territory into four major systems. The Wabash, he said, is opposed to this division because it insists that the fundamental requirements of the Transportation Act for the preservation of competition and the maintenance of existing channels of trade and commerce definitely forbid the elimination of the competition which one or more additional systems would furnish. For this reason the Wabash has filed an application to acquire control of a group of carriers, which include the Lehigh Valley, the Lehigh & New England, the Wheeling & Lake Erie, the Pittsburgh & West Virginia and the Western Maryland—a group whose distinguishing characteristic is the predominance of lineal rather than parallel absorption.

He appealed to the traffic men to consider it a public duty to testify at Commission hearings on consolidations, and referred to the necessity of state officials expressing themselves at those hearings. Mr. Williams continued:

Railway Credit

The operation of the railways under the schedule of rates fixed by the Commission has strengthened railway credit and demonstrated a tolerance and intelligent acceptance of railway rates remunerative for the service rendered. It is an outstanding fact meriting particular emphasis that the general increase in rates made by the Commission under mandate of the Transportation Act marked the beginning of the greatest era of prosperity in our economic history. From the standpoint of service dependability, the American railways were never so perfect as they are today but railway credit generally has not yet been established to a point which will permit broad financing through the use of stock or economical financing through the use of bonds.

In spite of the distinct advance of railway credit under the salutary provisions of the Transportation Act, industrial credit is still superior to railway credit. Industrial prosperity is a structure of which rail transportation is the foundation, yet it is today difficult for rail carriers to finance soundly in competition with the capital stock issues of industrial corporations. The prime market for bonds which in the pre-war period was so largely supplied by railroad bond issues is now largely preempted by tax exempt state and municipal bonds issued from year to year in increased volume and creating a problem which cannot well be ignored.

I am appalled at the dimensions of the problem which can be set up by the railway companies of the United States if their managements shall blind themselves to the economic and fundamental purposes of the Transportation Act—consolidation in the public interest with preservation of competition and the maintenance of existing routes and channels of trade and commerce—and shall distort the Act into opportunity for magnification and undue preponderance of their own system.

I will not believe that the result of this great national experiment will be a defeat of the national purpose expressed by Congress. Remember that purpose always! Consolidation to serve public interest—that service of public interest being expressly defined as requiring all possible preservation of competition and all practicable maintenance of existing routes and channels of trade and commerce. Subject to this, the true test and the only test is the capacity of the consolidated company to render increased and efficient public service. Upon this basis, and only upon this basis, can the several carriers justify the consolidation proposals now pending before the Interstate Commerce Commission.

A major, and a wholly unsolved problem has been thrust upon the railroads as well as upon the Interstate Commerce Commission by the juxtaposition of enabling and prohibitive

legislation. Consolidation is declared by Congress to be a national policy. The accomplishment of this national policy is committed, as a statutory duty, to the Commission, and (in the first instance at least), the obligation loyally to cooperate is impliedly devolved upon the railroads.

This situation has had results which were well nigh inevitable. Four great eastern systems came into experimental conference. A division of territory was hopefully, but tentatively, reached. This failed,—for reasons which it is not my province or wish to discuss. Independent purchases, then quick successive purchases, then allied purchases of stocks of competing companies ensued. Then followed applications for the establishment of systems. These applications were complicated by proceedings for the dislodgement of stocks acquired without previous authority of the Commission and in charged violation of the Clayton Act.

If accumulations of stock already made shall be treated by the Commission and the purchasing companies as impounded for ultimate disposition in accordance with the final consolidation decree, no harm will have been done and the lenient and provisional disposition by the Commission of "cease and desist" proceedings will have been justified as moderate and provident.

I have said this to emphasize my view that the solution of this great economic problem, in which the interest of the public is so vital as well as paramount, will not ultimately turn on clearing-house balances in stock ownership.

Economies Expected From Consolidation

Mr. William's address precipitated a discussion from the floor in which he answered the questions of "What are the economies to be expected from consolidation and are the economies from the major systems of the United States substantial in amount?" "Little economy will take place which is not the result of direct reduction of service and a loss to shippers if parallel and competing lines are consolidated," he replied. "In many cases delays in interchange will be avoided at junction points where two yards may be consolidated into one. There will also be some saving in money but I doubt if it would be enough to affect passenger or freight rates. The idea of consolidation is to merge the strong and the weak roads, and with it would come an improvement in service, tending to make the profits of the strong road compensate the losses of the weak road."

Others who contributed to the consolidation discussion included Lewis C. Sorrell, professor of transportation of the University of Chicago, who stressed the importance of the consideration of the public interest in consolidation; T. T. Webster, general traffic manager of the G. H. Meade Company, New York, who deplored the "barriers" which the railways have set up in their dealings with shippers through the formation of rate committees, and T. C. Berwin, vice-president of E. E. Staley Manufacturing Company, Decatur, Ill., who felt that a plan which contemplated five or more merged systems would be more beneficial to the central territory than the four-system plan.

Transportation Act Must Be Changed

In an address at the banquet Samuel O. Dunn, editor of *Railway Age*, advocated early legislation by Congress radically changing existing consolidation provisions of the Transportation Act. The existing consolidation provisions were declared practically unworkable and a serious obstacle to consolidations, rather than a means of promoting them.

"They provide, for example," said Mr. Dunn, "that if two or more railways are combined the corporation owning them shall not issue securities in excess of the value of the consolidated properties, and it is made the duty of the Interstate Commerce Commission to proceed immediately to the ascertainment of such value of the properties involved in the proposed consolidation.' In the O'Fallon case the Supreme court held that the commission's method of valuation was not in accordance with the law of the land, and in consequence there is not today and probably will not be for some time a final valuation of a single railway that could be used by the commission in determining what amount of securities should be allowed to be issued by a consolidated railway system."

Concerning the proper objectives of consolidations, he said:

Recognizing the fundamental principle that any policy regarding railways adopted by the government should promote the public interest, what things must the railways do in order to promote the public interest? First, they must render good service; secondly, they must give their employees good working conditions and pay them fair wages; third, they must charge reasonable and non-discriminatory rates, and, fourth, they must earn a fair return. What has been accomplished toward attaining these objectives since the Transportation act, including the consolidation provisions, was passed?

The service rendered has been greatly improved, and is now universally conceded to be better than ever before. Wages are higher than in any year excepting 1920, and higher in proportion to the cost of living than ever before; and the working conditions of employees are the best they ever were. The railways have never earned the fair return assured by the Transportation act; but their net operating income has been increasing, and it seems probable that this year they will earn an average of 5½ per cent on property investment, which will be the best result since 1916.

It would appear, therefore, that all the objectives at which any government policy in dealing with the railways should aim are in the process of being attained. Senator Cummins estimated that by consolidations there could be achieved a saving in annual operating expenses of five or six hundred million dollars a year. His estimate undoubtedly was greatly exaggerated. However since 1920, without the rapid and extensive policy of consolidations he advocated having been carried out, annual operating expenses have been reduced $1,400,000,000, and even within the last six years economies in operation equivalent—if allowance be made for the advances in wages made meantime—to $750,000,000 a year have been effected.

How have these great economies in operation been accomplished? Chiefly by the investment of billions of capital in improvements which have enabled the railways to produce more transportation with a given amount of labor, fuel and materials. Experience shows that great progress can be made in promoting the public interest without consolidating all the railways into a comparatively small number of systems, and that those who have advocated consolidation as almost the only solution of the railroad problem have exaggerated their importance. It shows that what is mainly needed to promote the interests of all concerned—of the railways themselves, their employees and the traveling and shipping public—is the making of such improvements in every mile of railway in the country as will render it practicable to render upon it such service as the traffic available warrants, and to render this service at the lowest practicable cost. The principal test of any policy of consolidation is whether it will further such improvements.

Our policy regarding consolidations should not be one of revolution, but of evolution. In England since the war they have tried the policy of revolution. They provided by arbitrary legislation that all the railroads should be consolidated into groups, and specified the railways that should be included in each group. Apparently nobody is satisfied with the results.

Suggested Changes

The existing consolidation provisions of the Transportation act should be repealed. The Interstate Commerce Commission should be relieved of the mandate to make a general plan of consolidations. Provisions should be adopted which would give the initiative in proposing consolidations to railway managements. The commission should be given a large measure of discretion in determining whether a particular consolidation will or will not be in the public interest.

No doubt the Interstate Commerce Commission should use any reasonable pressure the law empowered it to apply to promote the union of weak and strong roads. This will tend to reduce the number of lines which, while existing independently, are unable to give good service and operate economically. At the same time, there does not seem to be enough validity in the theory that the principal purpose of consolidations should be to combine weak and strong roads to justify disruption of existing systems that already are render-

ing good service and operating economically for the mere purpose of providing strong partners for weak lines.

The railways of the country should be allowed to combine, grow and develop in the future much as they have combined, grown and developed in the past, with this one exception—that the Interstate Commerce Commission should be empowered to prevent consolidations which may tend to establish monopolies in large sections, or which may tend in other ways to subordinate the interests of the public to the real or supposed interests of the owners of the railways. The sooner legislation for this purpose is passed the better it will be for all concerned. The present situation with respect to consolidations is highly unsatistactory, largely because it is preventing many important needed improvements in railways from being made.

The effecting of all the consolidations which may be desirable from the standpoint of both the railways and the public will not, however, solve the railroad problem. If, the purpose and effect of a program of consolidations were to be the restriction of the total net operating income earned by the railways as a whole to less than it would be if no program of consolidations were carried out, then such a program would do more harm than good. The country needs prosperous railways. It is much better off with some prosperous railways than it would be with no prosperous railways. A program of consolidations that would help the weak lines without injuring the strong roads would be beneficial. A program that would weaken the strong roads more than it strengthened the weak roads would, in the long run, prove disastrous.

Railroad Taxation Increasing

Following the preliminary business of opening the convention, which included brief remarks by the president of the Traffic Club of St. Louis, G. E. Goodwin of the Liggett & Myers Tobacco Company, an address of welcome by Victor J. Miller, mayor of St. Louis, and a response to that welcome by T. T. Harkrader, traffic director of the American Tobacco Company, president of the Associated Traffic Clubs, the first address of the meeting was given by R. H. Aishton, president of the American Railway Association. After reviewing the outstanding accomplishments of the railways of the United States, Mr. Aishton called attention to the fact that in 1903 the railroads paid $1 in taxes for each $36 of earnings while in 1928 they paid $1 of taxes for each $15.68 of earnings. He asked for cooperation from traffic men, continuing:

There is one feature of efficient transportation in which the traffic manager plays a key part. That is, in the maximum utility of railway facilities, particularly the tons per car. Nothing affects the freight car's efficiency more than the tonnage it can be made to carry. To illustrate: In 1928 (exclusive of l.c.l. shipments) 35,737,406 carloads of traffic were handled in the United States, with an average loading of 35 tons per car. Had this average loading been increased by one ton it would have required 995,013 less carloads to have moved the same tonnage.

Railways and Water Transportation

Turning to the future, the railways realize that they must meet all proper competition. Instead of attempting to obstruct or destroy these new agencies of transportation, they are seeking by cooperation to utilize them in producing the kind of transportation service which the public demands. They are of course prohibited by law from entering the field of water transportation service. There is in some sections of the country a great popular misconception as to the attitude of the rail carriers toward inland water transportation service. It appears sometimes as if whatever the railroads may do or may say is misinterpreted as being done to obstruct the great channel of commerce on the inland waterways.

What is the real attitude of the railroads in this respect? The carriers have offered and are offering no opposition to federal expenditures for the improvements on these inland waterways. With respect to all the plans for making waterways available thoroughfares for transporting traffic as an economic necessity the railroads have expressed no opinion and have taken no position. I say definitely and emphatically that they are placing no obstacles in the way of accomplishment along these lines although, carrying an increasingly heavy burden of taxes, they must pay a substantial portion of the expenditures and thus have a right to be concerned in the question of the economic necessity for such expenditures. More broadly still, the railroads have steadfastly refused to be placed in a position of opposition to the development of any legitimate form of transportation which is economically justified.

There are three things to which the railroads make objection. They are opposed in principle to the government entering into a competitive transportation operation with them. The rail carriers are opposed to being subjected to a competition wherein the competitor is relieved from important items of operating costs which the rail carriers and other private enterprises generally must meet out of revenue. The rail carriers, finally, object to the method of making rates by the government barge line operation. It should be clearly noted that the rail carriers are now making an earnest effort to adjust themselves in actual operations to the inland waterway policy of Congress as expressed in the Denison Act and have adopted and are now employing to that end practices of substantial cooperation.

Inland Waterways

Inland waterway operators were represented by Carl J. Baer, president of the Standard Unit Navigation Company and vice-president of the Mississippi Valley Barge Line, St. Louis. In his talk on "Inland Waterways" Mr. Baer advocated a plan of complete cooperation between the various agencies of transportation, naming railroads and motor truck lines as two factors in the transportation scheme and the waterways as the third factor, in bringing about the greatest economies in transportation for the public. An abstract of Mr. Baer's address follows:

In considering the relationship between the water and rail carrier, it is perhaps well to know that all of the great cities in the world have been developed on the waterways, and that in the development of large cities in the United States, where water carriers have been maintained, rail lines have developed in greater proportion. However, I do not believe this can be accomplished by a destructive policy upon the part of the water carrier to lower rail rates in the district by pursuing a cutthroat policy of competition. If we can make ports of the inland cities and towns in the United States, there is no railroad line operating in the 27 states of the Mississippi Valley which would not reap indirectly or directly and immediately the benefit of such development.

I am not one of the advocates of reduction in rail rates as a solution of the economic problems of the country, but I do believe that the people of the United States are entitled to the very lowest rates consistent with reasonable profits to the carriers. Instead of reducing the railroad earnings by forcing prohibitive rates upon them, would it not be better for all parties concerned to give careful consideration to the utilization of the inland rivers and canals of the country which such modern mechanical devices and equipment that will fit the rivers and at the same time fit into the railroad plan of operating freight cars?

If the railroads of this country could eliminate and strike from the statute books the Panama Canal Act, prohibiting railroads from operating boat lines, would it not be good business for the railroads to use the rivers as an economical operation for the handling of a part of their freight?

In this connection, let me say that if the cost of waterborne freight averages one-third the cost of handling freight by rail or truck, why should we compel the American railroads to invest additional capital running into the billions of dollars in new rail lines when we have already available some 30,000 miles of trackage in the form of a waterway without the investment in roadbeds, bridges, trestles, ties, rails, tunnels and maintenance cost? Why not put these rivers to work, which can safely be done with a comparatively small investment and operate a through shipping service under a standardized plan, immediately establishing joint river and rail rates to all parts of the country, which will result in a saving to the American people on all water-borne freight and at the same time develop new territory and new business for the present carriers, thereby enabling the railroad to increase their volume of business on approximately their present investment and not compel them to build new lines to take care of the increasing volume of business, which under the present rate scale might not be profitable.

I claim that a properly operated common carrier by water on the inland rivers of the United States should adopt first, a standardized plan for its operation with standard equipment designed to fit the rivers as they are, to fit the shippers' needs and to fit the rivers as they are, to fit the shippers' needs and to fit into the present railroad plan of operation, giving a through shipping service, passing its barges from one river

line to another just as the Wabash passes its cars to the Illinois Central, and that it should follow not only the railroad plan of a per diem charge for the use of its barges from one division to another in its system, but it should give a through bill of lading and a service equal to the present rail service. It should further establish joint rates with the railroads on an equitable basis and should effect the closest co-operation with all rail carriers.

In conclusion, let me say that the waterways can be made to carry a part of the burden of the transportation of the United States, but if the waterway advocates take the position that waterways must be used as a means of lowering the rate structure of the country, and as a competitive agency to destroy the present rail fabric, or to lessen the costs of transportation other than the service which can be rendered on the waterways alone, in my opinion, we are assuming a task which instead of being helpful to transportation is utterly destructive.

A second speaker on the railway side of the inland waterway problem was John M. Fitzgerald, assistant to the chairman of the Committee on Public Relations of the Eastern Railroads, who, in pointing out that the destination value of the traffic handled by the railways during 1928 was more than 68 billion dollars, asserted that the inland waterways could never provide the fast and dependable service required in the transportation of this enormous volume of industrial products, or even a small part of it. He stated that modern business considers speedy railway service absolutely essential to the science of distribution, to the maintenance of minimum inventories and to the rapid turnover of merchandise stocks.

Mr. Fitzgerald declared that the creation of transport agencies which are not essential to the efficient movement of the nation's commerce, and the duplication of existing facilities and service, constitute an economic waste which substantially increases the total transportation bill of the people. Relating this statement to the inland waterway plans, he continued:

> The proposal to supplement existing transport facilities with a system of artificial waterways admittedly involves the expenditure of millions of tax money. Before we add to the already heavy tax burden of our citizens we should determine whether we really need additional transportation and whether artificial waterways will furnish a quality of service which shippers can and will use.

What Is the Value of Artificial Waterways?

The true value of any transport facility can be determined only on a basis of cost of service and value of service. The value of existing rail service is freely conceded; the value of the oceans and the Great Lakes, which are true gifts of nature, cannot be questioned; but the value of artificial waterways, as a transportation agency, has not yet been proved.

If dependable service means continuous service, waterways are not dependable. They operate only a part of the year and even during the season of navigation their operations are governed by water conditions. It is apparent, therefore, that railways or other forms of service must be maintained to handle traffic when these waterways are unable to function.

During the early part of the present year operations on the New York State Barge Canal were hampered for approximately 30 days due to high waters. On the other hand, we have just passed through a period when low water on the Mississippi river prevented the operation of standard barges between St. Louis and New Orleans.

It is interesting to note that when the governmentally operated Mississippi-Warrior River Barge Service should have given to agriculture the much discussed 'cheaper transportation' for the grain crop, it lacked a highway over which to float its equipment. And this in spite of the fact that more than 600 million dollars of public money has already been expended upon the Mississippi river and its tributaries.

When the public pays a rail rate it does pay the total cost of the service. Railway rates not only cover maintenance and operating charges but they also cover interest, fixed charges, depreciation, taxes, and any dividends which may be paid to rail stockholders. Rates for service over artificial waterways do not cover the total cost of the service. They merely constitute a partial payment for the movement of traffic and the total cost of the service can only be determined after operating deficits have been paid from tax funds.

The New York State Barge canal was constructed and it is maintained from state tax funds. Rates for service on this waterway do not include interest on investment or depreciation —they merely cover the charge of the boat-owner for moving the goods. During the season of 1928 the canal handled about three million tons of traffic at a deficit of more than 10 million dollars— or an average of more than $3 for every ton moved. As a matter of fact, the actual cost of this transport service was nearly 2½ times as much as it would have cost to move it by rail.

The Mississippi-Warrior River Barge Line is a governmental transportation service operated over a waterway maintained at public expense. Its rates do not provide for interest on investment. As it is a government operation, it pays no taxes.

In closing, Mr. Fitzgerald made it clear that the public should be provided with all the transportation necessary to its comfort and welfare and to the proper conduct of industry. At the same time he expressed the idea that each should function in the field where it can furnish the most efficient service at the lowest cost—the cost of providing any form of transportation to be paid by those who use the service.

Discussion from the floor on the subject of inland waterways was started by H. A. Palmer, editor and manager of the Traffic World, who declared that there is no more sound economic reason for the operation of barge lines by the government, to lower freight rates, than there is for the government to build a railroad for the same purpose. Such operation, he said, is unfair to the ordinary taxpayer who does not use the barge lines, to the railroads, and to the shipper who uses the railroads. Mr. Palmer looked upon the barge lines as beyond the experimental stage. He referred to them as part of an established governmental policy and took the Hoover administration to task for entering into business in competition with private enterprise. R. W. Dietrich, president of Dietrich & Wiltz, Inc., New Orleans, La., and representing the Traffic Club of that city, also declared that the government barge lines have grown from an experiment to a permanent institution. The barge lines, he asserted, find it necessary in order to secure traffic, to offer inducements greater than the 20 per cent differential under rail rates. An example of this is in the practice of allowing 60 days' free storage for sugar in government warehouses at Memphis. The American Warehousemen's Association has protested against such practices and is now preparing to enter legal proceedings to obtain relief from what was termed unfair competition.

Motor Transport

The first speaker on "Motor Transportation" was George Hannauer, president of the Boston & Maine, one of the roads which has pioneered in highway operation as an adjunct to its rail lines. The railroads of the country are the logical agencies to operate motor trucks in commercial service, and such coordinated operation will facilitate a desirable regulation of all highway carriers in the public interest, Mr. Hannauer said in speaking at the banquet. Enlarging upon that statement he continued:

> The railway can use the highway or the rail, whichever best fits the job,—service and cost considered. It can coordinate the two so that passenger, mail and express will receive through rail-highway transportation, with undivided responsibility. The railroad brings regularity and permanence to the service, provides responsibility for safe carriage and responsibility, where there is now much irresponsibility. Finally, railroad operation of highway motors for hire will facilitate a desirable public regulation.
>
> While conditions on various railroads differ, I am nevertheless convinced that the railroads should be experimenting extensively with passenger and freight motors on the highway as a part of their service in order that rail and highway transportation may each find its proper sphere. It would seem also that public bodies should cooperate freely with such operations, for if these experiments are not made, we are likely to fail

for a long time to put motor operations on economically sound bases.

The paramount use of the highway being by the passenger automobile, we must determine if it is economically sound to build highways stronger and wider at great expense in order that commercial vehicles may not delay and endanger the passenger automobile, or whether it is better to reduce the size and accelerate the speed of the commercial vehicle so that it will approximate the dimensions, the weights and the speed of the larger private automobiles. I believe the latter will be found the correct solution, at least for transportation between communities.

Many of the operators on the highway function at a loss. This is now pretty generally conceded and is a factor which is getting increasing consideration. Individuals and companies are going into and out of the business every day. It is still far from stabilized, except in the hands of a relatively few operators.

The highway motor has added enormously to our freight traffic. First, shipments of automobiles and trucks, by rail represents a substantial addition to the freight revenues of the railroads. Next, the automotive industry has given employment to large numbers of men who as consumers become patrons of the railroad. Many new structures—garages, salesrooms, service stations and warehouses—have been erected to accommodate the motor and the railroads have the opportunity of hauling this material. The consumption of fuel by the motor has made gasoline one of the important commodities in rail transportation.

The automotive industry has stimulated employment that has been a very important factor in the great prosperity of the country, and in this prosperity we all share. It has employed many persons displaced by mechanism in other industries. To antagonize the development of the highway motor would be short sighted and unwise.

Practical traffic men, railroad officials, and students of transportation alike, are agreed, however, that the railroad is, and will remain, the principal transportation medium of the country for inland movement. Our task is to cooperate effectively the functions of rail and highway transportation, and especially to do our part in steering the development of highway motor vehicles along sound lines.

At the last session of the meeting A. J. Brosseau, president of Mack Trucks, Inc., and Robert E. Lee, manager of the St. Louis Automobile Dealers Association, also spoke on motor transportation. Mr. Brosseau expressed the belief that there is little likelihood of the enactment of federal laws for the regulation of motor coach and truck operation until Congress is impressed with the importance of adopting laws which will promote and foster the development of highway transportation upon its own merits. Federal regulation that has been proposed has been directed not primarily at the vehicle as a mode of transportation, but as an agency of competition. Mr. Brosseau declared that an increase of 82 per cent in taxes and fees in the past five years brings up the question of whether motor coach taxes are not already so high as to be exorbitant, and he referred to the fact that the average common carrier motor coach is assessed over $500 per year in various taxes. Motor coach taxes represent less than two and one-half per cent of expenditures for highways he said.

Other speakers on the program included Amelia Earhart, assistant to the general traffic manager of Transcontinental Air Transport, Inc., and C. S. Jones, president of Curtiss Flying Service. Mr. Jones described the present status of commercial flying and pointed out some of the recent developments in that field.

In presenting the report of the Committee on Education and Research of the Association, W. E. Butterbaugh, professor of transportation of the University of Minnesota, referred to the industrial traffic management survey which forms a part of the organization's campaign to eliminate industrial waste and which will be published this year by the government.

The board of directors selected Cincinnati, Ohio, as the place for the April meeting of the association, the exact dates of which will be announced later.

I.C.C. to Consider Reproduction Cost in Valuation Revision

WASHINGTON, D. C.

A BRIEF statement by the Interstate Commerce Commission of its intention to give consideration to costs of reproduction in its valuation of the railroad properties, in the light of costs prevailing at the time when it brings the valuations up to date, is included in the report of Division I of the commission in the case of the New York Connecting Railroad, Valuation Docket No. 1,017, which was made public October 15. The report is dated as having been adopted June 7, following the decision of the Supreme Court in the O'Fallon case, which held that the commission had failed to give effective consideration to reproduction costs. The statement repeats those made in earlier decisions as to the intention to consider reproduction costs and states that this will be done in revising to later dates the valuations now being determined, stating that in the revision "consideration will be given to the costs prevailing at the time." The report says:

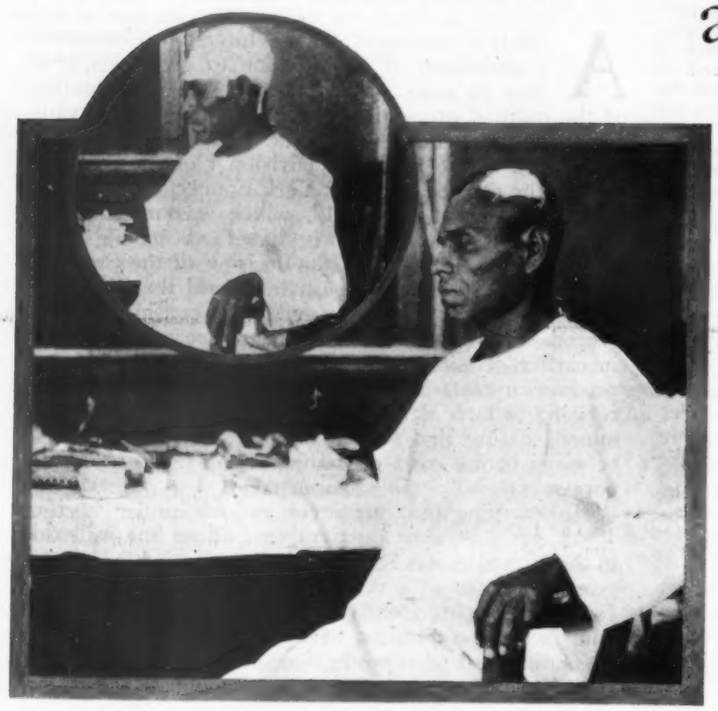
"In carrying out our investigations under section 19a it early became apparent that all of the railroads in the United States could not be inventoried in any one year and dates of inventory were established ranging for the most part from 1914 to 1919. In each instance lands were appraised as of the date of inventory. In estimating cost of reproduction, however, it was found impracticable to apply prices as of each of the different dates of valuation and to meet this difficulty the prices applied in all instances were the fair average of those in effect during the period of 5, and in some cases 10, years immediately prior to June 30, 1914. This method has the further advantage of permitting consideration of the reproduction costs of all carriers as of a common period so that as the prices of material and labor vary adjustments may be made from time to time to keep all appraisals on a comparable basis. *Winston-Salem Southbound Ry. Co.*, 75 I. C. C. 187, 192. Any other plan would immensely complicate and in fact might defeat the intent to ascertain values as of current dates in the wholesale manner required by the act.

"The values now being determined will be revised to later dates when use is made of them for any purposes under the act, and in the revision consideration will be given to the costs prevailing at the time. We know of no proceeding in which the instant valuation is important as bearing upon any issue as to which under the act this valuation is admissible as prima facie evidence. If, however, the values as of these earlier dates are material in any proceeding under the act, the parties may bring the matter to our attention in order that we may give consideration to the prices applicable as of the respective dates. But with the present basic valuation constituting, virtually, an administrative step in the determination of quantities and other matters of a much greater scope, it is sufficient to indicate our intention to deal with this particular subject at such later dates as we may be called upon to fix values of these properties, when we can give the then costs of reproduction the consideration which may be required by the law of the land."

THE "BROADWAY LIMITED", New York-Chicago train of the Pennsylvania, has been made the subject of a motion picture, with sound effects. The picture was first shown at the Erlanger Theatre, Philadelphia, on October 12.

Safety Men Discuss Use of Motor and Hand Cars*

Operating subjects and restorative surgery as practiced on Union Pacific also considered



Collodion Dressing on Scalp Wound Less Cumbersome than Old Style

THE viewpoints of maintenance of way and transportation officers regarding the achievement of safe performance and the Union Pacific's surgical treatment of injured employees to reduce the casualty rate were given serious consideration at the Steam Railroad Section sessions of the eighteenth annual safety congress of the National Safety Congress held at Chicago on October 1 to 4. The sessions were also devoted to various other subjects an account of which has appeared in a previous issue of the *Railway Age*.

R. B. Ball, assistant chief engineer of the Atchison, Topeka & Santa Fe, presented the first of the papers on maintenance of way accidents. The operation of motor and hand cars was stressed by the maintenance of way speakers as one of the most disturbing problems of safety in that department. Mr. Ball said in part:

The safety movement and the prevention of accidents among the maintenance of way forces is here to stay. The time will come when safety will be a condition of employment and the old employee will find it a condition upon promotion. Those who hope for advancement owe to themselves full and active support in the prevention of accidents. Those who have under their control and supervision the working employee in the maintenance of way, owe to the men their safe guidance against accidents and injury.

The carriers have made possible complete instructions. They have appointed safety directors, assistants and committees. They call meetings for full discussion of accidents, their cause and their prevention. Suggestions are sought and many of these are within the control of the supervisory forces to themselves correct. Others are within the control of the local officers, and some few are far-reaching. This latter type is studied carefully; it may involve a change of standard or of policy, but if found sound, money is authorized for adoption. Thus working conditions have been improved until there is little reason for accidents through such causes. These meetings are a further benefit in that all of the employees are better educated as to standards and as to policy than if left to dig out their own education through the checking of plans or the reading of correspondence.

The maintenance of way forces have had accidents; they will continue to have them. But these meetings, this education, have limited the accidents to gross carelessness, which is a serious problem requiring more and stricter supervision; accidents chargeable to new men on whom the railway has not had time to exercise its influence, and accidents from the unusual cause on which supervisory forces and men have not had experience or education. However, the field is so large, the opportunities of accident so great, that a practical education in unusual accidents is impossible and instruction must be depended upon. The higher the mentality of the men, the more a railway company might expect in thought as a protection against accidents. Men may be trained to normally work in a safe manner, but in the protection against the unusual accident some thinking must be done, and for this thinking the railway company must depend primarily upon its supervision and to a lesser extent upon the men performing a task

The usual accident originates in the performance of some task without any thought. A similar task may have been done previously without accident, but when this task is broadened to involve a risk which will sooner or later result in an accident and injury either to the employee performing the task or to his fellow worker, then the railway company has the right to exact from its supervisory forces enough thought, enough supervision, to keep the men in the performance of this task directed against accident.

The power to analyze between safe and unsafe varies with different men. The safe course is quite often a matter of judgment and to keep this judgment on a sane course is our reason for the continual instruction of the men and to supervision. If we can keep supervision alive and abreast of the instructions and teachings of safety, then even with the variable judgment of men, accidents will decrease. The problem is to keep some judgment working all the time. The safety work has cost the railways considerable money. But we hear no criticism in this regard. It has cut down the accidents, relieved to a large extent useless injury, and in this the carrier must get its return.

Many of the railroads now handle considerable construction by contract. The contractors are preaching safety not only because of the saving in insurance, but because an accident interferes with progress. This preaching from an outside source is reaching the maintenance men with telling effect.

Big Four Concentrates on One Subject at a Time

Another paper dealing with safety in the maintenance of way department was presented by E. H. McGovern, division engineer of the Cleveland, Cincinnati, Chicago & St. Louis at Mattoon, Ill. In it he recounted the experience of the St. Louis division in reducing accidents:

Prior to January 1, 1928, the St. Louis division of the Big

* A general account of the meeting including abstracts of addresses made by Messrs. R. H. Aishton and T. C. Powell and abstracts of committee reports and papers presented by mechanical department officers appeared in the *Railway Age* of October 12.

Four was numbered among those which had an unenviable safety record. The safety movement had been an issue for several years; regular division safety meetings were held, safety instructions issued, and lectures delivered on Safety First, but with all this there was a passiveness, and, because of it, nothing tangible resulted. I attributed the principal reason for our poor showing to this passiveness. I sought the counsel of our safety agent. The following day I called a supervisors' meeting and placed the matter before them in all its aspects. I told these gentlemen of the seriousness of the situation; that corrective measures must be instituted and their enforcement insisted upon. I called for suggestions from them, asked their cooperation, and told them of my faith in their ability and desire to help, and that I knew they would see the thing through. I pointed out to them the allurement of accomplishment and the personal satisfaction of pride in a task well done. Their response was gratifying.

So inspired, each supervisor called his foremen and other subordinates together and stressed the necessity for an improvement in their safety performance, clearly and positively setting forth that in the future, responsibility for accidents was to be placed where it belonged; that they would be expected to lead their men along the path of safety, and that by so doing, they would improve the morale of their men, add to their value to the company, and confer a real benefit upon the men themselves. That meeting left a lasting impression, for today, every man in our department realizes the sincerity of our purpose.

The first problem was that of education. Organization was the first lesson taught. The method of co-ordinating the various branches of activity was clearly defined; systematic planning and execution of the work were explained, impressing upon the men the fact that success is the product of knowledge and preparation, that unless they were thoroughly familiar with what was to be done and how to do it, their efforts, however earnest, would come to naught.

Then came the campaign on defective tools. This was followed by instruction in the proper method of handling material. Then instruction was given in the inspection and safe operation of motor, hand, and push cars. Bi-weekly meetings for all of the gangs were arranged and monthly maintenance of way staff meetings were inaugurated, at which all safety matters are discussed. During instruction, it is indelibly impressed upon all that the highway traveler has the right of way.

A daily reminder for each gang, in the form of a bulletin board, was placed on all motor and hand cars, bridge, building and signal camp cars, indicating the number of days since the gang had an accident. This is changed on the morning of each day and the date recorded. The foreman is held responsible for the board being kept up to date at all times. Each man is assigned one week to keep the board marked. The purpose of it is to call attention before each day's work begins to the fact that safety comes first, and it has accomplished some good, but unless it is marked daily, it loses its effectiveness.

Charts were prepared and distributed to all gangs, showing statistics of those injured, the contributing cause, the time of day the accident occurred, the age of the injured man and the length of time he had been in service. This disclosed that in the year 1927, 24 per cent of the injuries occurred handling material; 17 per cent, pulling and driving spikes; 13 per cent from foreign substances in eyes; 7 per cent, handling motor, hand and push cars; 6 per cent, handling tools; 5 per cent, cutting rails and bolts, and the remaining percentage due to miscellaneous causes, such as creosote burns and injuries from falls and sprains. Sixty-three per cent of all accidents occurred between the hours of 7 a.m. and noon, 37 per cent between noon and 4 p.m.; 4 per cent of the men injured were under 20 years of age, 20 per cent were between 20 and 30 years; 24 per cent were between 30 and 40 years; 31 per cent were between 40 and 50 years; 20 per cent were between 50 and 60 years; and 1 per cent were between 60 and 70 years; 59 per cent were in service less than 1 year at the time of their injury; 25 per cent, from 1 to 5 years; 11 per cent, 5 to 10 years; 2 per cent, 10 to 15 years; and 3 per cent, 15 to 20 years.

When we were having a large number of reportable injuries, reports were accepted that contained excuses rather than facts, so specific instructions were issued, and they are being carried out to the letter, that when an accident occurs, regardless of its severity, the foreman, or whoever is in charge must call the division engineer's office on the phone immediately and give full details to the chief clerk before a written report is made. He, in turn, gets in touch with the supervisor, who makes a personal investigation as quickly as possible and reports. The division engineer, or his assistant, in company with the safety agent and supervisor, follows up with an investigation if the circumstances warrant, and then places the responsibility.

Very little time is lost from the moment the accident occurs, until the case has been disposed of. When it becomes necessary for an injured man to see a doctor, in most cases the foreman accompanies him and reports the doctor's finding to the office by phone. The foreman likewise visits the men after working hours, and the supervisors, on their trips over the division, visit the injured men and consult with the doctor. This has had a splendid effect, for it creates mass enthusiasm, which is contagious, and spreads throughout an organization and develops team work—a thing most essential in the complexities attendant upon carrying forward a great practical project.

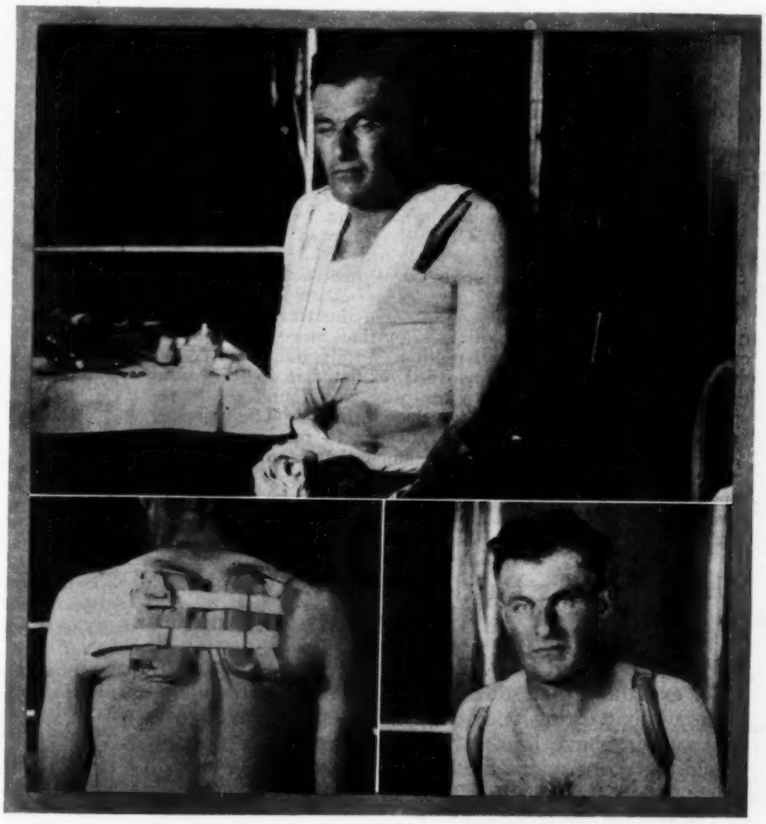
After the educational efforts had reached all supervisory forces, and sufficient time had elapsed for the carrying out of all safety rules and regulations, we entered upon a program of enforcement. It required little effort to impress upon the minds of all the men, our determination along this line, as it is human nature for a subordinate to carry out the will of his superior. Some there are, of course, who require discipline to awaken them to a consciousness of their duty, but these cases have been very few.

The following table shows, for the St. Louis division, maintenance of way forces, the number of reportable injuries and the ratio per 1,000,000 man hours, from 1925 to 1928 inclusive:

Year	Injured	Ratio
1925	79	32.26
1926	87	39.89
1927	49	23.66
1928	6	2.89

Of the six accidents that occurred in 1928, four were avoidable, being the direct result of safety rule violations.

Reviewing our efforts for the past 20 months, I have con-



Light Leather Shoulder Brace Applied to Fractured Collar Bone Permits Use of Hands and Arms

cluded that the following requisites are necessary for the prevention of accidents:

First, official interest; second, education; third, enforcement of safety rules.

L. & N. Makes Track Workers Safe

The subject of "Safety to Track Employees" was introduced by E. G. Evans, superintendent of safety of the Louisville & Nashville, in the absence of J. R. Watt, general roadmaster of that railroad. Mr. Watt confined his remarks to the Louisville & Nashville's experience with the promotion of safety among track employees, citing the fact that prior to 1927, 25 per cent of the road's total injuries occurred in the track department, which was responsible for less than 20 per cent of the total man hours. At the end of 1927, the department had effected a 12.7 per cent reduction in injuries. During 1928, the efforts were continued and at the close of that year a further reduction of 62 per cent had been made, as compared with 1927. At the same time the percentage of total injuries on the entire road chargeable to the maintenance of way department was reduced from 27 per cent in 1926 to 22 per cent in 1928.

The keynote of the efforts, Mr. Watt stated, has been the development of an interest in the safety situation in the minds of the foremen. One of the first steps in the inculcation of the safety idea was the issuance of a statement by the president of the railroad, a copy of which is given each month to each employee on the system. A book of safety rules was prepared and distributed and a two-reel motion picture indicating the proper methods of performing track work was shown to the track foremen.

After the broader principles of work were outlined, attention was turned to such details as the improper use of tools and the habits of the men in standing too close to passing trains and throwing tools and materials in a way that might cause injury. The example of applied discipline was found to be of greater educational value and to have more force than a long series of appeals, arguments or instructions.

Two factors have given the track department considerable difficulty—malingerers and the operation of motor cars. The problem offered by malingerers is being combated by insisting that each injured man report his injury promptly to the foreman. At the same time the doctor is usually allowed to be the judge of the fitness of an employee to return to duty. The increasing use of motor cars with its increase in the efficiency of gangs, has led to abuses and movements through tunnels and at night have been a source of accident. One rule which has been adopted is: Approach street or road crossings, station platforms or persons or animals near the track under full control. Be prepared to stop if necessary. Cars are not allowed to operate at a speed in excess of 20 m.p.h.

A detailed analysis of the injuries in the track department of the Louisville & Nashville shows that more than 50 per cent were chargeable to the handling of rails and ties. To reduce this amount, rails were loaded on flat cars instead of in gondolas. A lack of supervision was also found to be responsible for a large portion of these injuries. The principle was established that it is much cheaper to repair or replace a tool than to pay the damage claims that result from this cause. Close supervision must be looked upon to reduce the number of fatalities from men being struck by engines or cars—the cause of practically all maintenance of way fatalities on this road.

U. P. Success Partly Due to Restorative Surgery

Dr. John R. Nilsson, chief surgeon of the Union Pacific, explained that some of the methods used on that railroad in treating accidental injuries and in restorative surgery have been largely responsible for the low casualty record maintained on the system. He said in part:

The surgical and medical staff on our road are paid a salary, graduated according to the amount of work that may reasonably be expected of them, and do not receive fees or make charges for individual cases. We endeavor to retain the best doctor available in each locality and see that our employes receive the highest professional and ethical treatment. Under this arrangement there is no temptation for a surgeon to prolong treatment of any case or to encourage malingering. The surgeon, being himself in a way an employee on the company payroll, takes a natural interest in preventing any unnecessary loss of time or loss of income to the employee and his family through injury or illness, if by proper treatment and handling he can safely be allowed to continue at his work. On the other hand, we jealously resent any effort to coerce the surgeon into returning a man to duty whose condition is such that rest or relaxation is necessary to proper recovery. No man is permitted to resume duty after any injury whatever, until he is given a written release by the surgeon, addressed to his foreman, certifying that he can return to his regular work.

Treatment of Head Wounds

If an employee has received an injury to the head, and suffers from shock, either slight (feeling giddiness or seeing stars), or mild (when stunned for a few moments), or severe (unconscious) he is not allowed to return to duty until he has rested 24 to 48 hours, and we have determined that there has been no change in the brain substance—such as small hemorrhages causing weakness or paralysis in certain groups of muscles.

If the head injuries result in only ordinary lacerations without shock or fracture, the wounds can be cleansed, sutured, and sealed; an immunizing dose of anti-tetanic serum administered, and the patient is usually allowed to return to duty within the first 24 hours. If a large, bulky dressing has been used, covering his head so that he cannot wear cap or hat, a man naturally cannot be expected to return to duty within three days, but we try to avoid such clumsy and alarming looking bandages and apply as neat a dressing as possible.

Fractures of the skull often look much less serious than scalp wounds, but whether slight or severe, such cases are not allowed to return to duty until fully recovered; as many of these fractures, however slight, may be followed by severe, persistent headaches, dizzy spells, changed personality, loss of vision or epilepsy. Our rule is six weeks rest in bed, even in case of slight fractures.

Our employees are encouraged to go to the nearest company surgeon, as quickly as possible, for the removal of any foreign particle from the eye. This prevents much of the trouble often experienced through infection introduced by unskillful attempts at removal. Generally after the particle has been removed, there is no difficulty whatever unless it is necessary to bandage the eye, which is seldom. Of course, where laceration or puncture has resulted from flying metallic fragments, such injury is likely to result in reportable disability, but such cases are very rare on our road because goggles are almost universally worn when in a vicinity where such an injury could be received.

When foreign bodies are embedded in other soft tissues, where local anaesthesia can be used, such fragments are removed, the wounds closed, and often times the employee can be returned to duty within the three day limit. Of course, if the fragment enters the lung or the abdomen, disability depends entirely on the local conditions in each case.

Every back injury, such as a sprain, twist or wrench (Traumatic Lumbago), is X-rayed to determine whether there has been any injury to the spine. Such cases are usually strapped up and confined to rest in bed. Many backaches are caused by weak feet, arthritis, deformity of the spine, abnormalities in the abdominal cavity, such as loose kidney, and a differential diagnosis must be made in each case. It is often difficult to determine whether the condition is the result of actual injury or sprain, or is of a rheumatic nature. Back injuries are the most easily feigned by the malingerer, or imposter, and the doctor must use his best judgment in the individual case, remembering it is easily possible to misjudge the cause of a backache.

The importance of spinal fracture depends on damage to the spinal cord or nerves. If in the cervical region or neck, a fracture with dislocation is usually fatal in a few days. Fracture of the body of a vertebra or impacted fractures usually are caused by falls as from the top of box cars. Such fractures may be easily overlooked until pain and deformity occur unless the spine is X-rayed at the time of injury. Fracture of the transverse processes is usually caused by falls on the back, such as the case of an engineer who fell backward from an engine gangway, causing the fracture of three transverse processes in the lumbar region. Of course, all these spinal fractures are serious injuries, and necessarily reportable.

Fracture of the clavicle is treated by applying a leather shoulder brace which allows freedom of the arm and the hand, and occasionally a case of this kind may properly be returned to duty, depending upon the occupation. For instance, an injury of this kind to a clerk or a foreman who is not required to do actual manual labor might not incapacitate him from performing his ordinary duties. Of course, no man could be returned to duty with such an injury if his work involved climbing, lifting or similar activity.

Rest Periods Required After Injuries

Fractured ribs are frequently not incapacitating injuries. In a simple fracture of this kind where there is no displacement, the patient is strapped and bandaged and returned to duty, depending upon the nature of the occupation. A man whose work requires much lifting, climbing about or manipulation of heavy tools, would not be allowed to return to work until the ribs were healed—a period of perhaps three weeks or more. On the other hand, a painter, doing ground work only, a crossing flagman, or man similarly employed, might properly be returned to work.

Simple fractures of the phalanges of the fingers and toes, without displacement, can often be splinted and the patient returned to duty provided the splint and dressing do not interfere with his occupation.

A patient with a fracture of the forearm cannot return to duty until healed. The same applies to fracture of the upper arm. A fracture of the toe can be splinted and patient returned to duty, in some cases, depending upon the nature of the fracture, the kind of splint necessary and the occupation of the injured person.

Patients suffering from dislocation of the fingers are allowed to return to duty unless complicated by torn ligaments and provided the dressing of the finger does not interfere with their work.

A dislocation of the shoulder, in many instances, is not disabling over a period of three days. The extent of incapacitation usually depends upon the length of time the shoulder was dislocated before being returned to position. Dislocations of the knee or ankle are not allowed to return to duty until the injury is healed.

Compound Fracture of Right Thumb Healed with Aluminum Splint (lower insert)—Improper Wooden Splint (upper insert)

Under present rulings, where the history shows the hernia developed at the time of active exertion at work, it must be considered an injury, unless it is found to be a recurrence of a previously developed hernia. Usually a hernia can be restored and trussed and returned to duty within three days, until desirable or convenient to operate for permanent correction.

We instruct our surgeons that no injured employee is to be returned to duty with his hand, arm or leg in a cast, splints, or encased in any dressing that would interfere with his occupation, nor on crutches. We do not permit releases to be given until the injured man can resume his former position or a position of the same payroll classification or description and rate of pay, and is fully able to perform the duties of such position. We permit no releases to be issued to employees who expect to go on a vacation or take a layoff, or attend to personal business, as the release must not be issued until the employee is actually able to resume his former duties.

Operating Departments Stress Proper Supervision

The afternoon session of the second day was devoted to the consideration of accident prevention in the operating department—in train and yard service. Practically every speaker emphasized the importance of proper supervision, coupled with the judicious use of discipline as the best means of accident reduction. F. S. Risley, general superintendent of the New York Central at Buffalo, N. Y., stated that the better the safety record, the more necessity there is for intensive safety work, if progress in that direction is to be continued. An abstract of his remarks follows:

Personal injuries due to improper conditions have been reduced to a minimum, with the expenditure of about $40,000,000 annually for additional safety apparatus and safe structures, so that it is the casualties which result from improper practices to which particular attention must be called. An analysis of the number of accidents on Class I railroads in the United States in 1928, shows that the vast majority were due to negligence of employees. The element of personal responsibility must be developed in each employee if a reduction of casualties in train and yard service is to be continued.

The rules or special instructions that are issued from time to time cover almost all conditions of train and yard work, and in practically every case of accident or personal injury, investigation will develop that some rule or special instruction has been violated and that if it had not been the accident would not have occurred. The first and most important duty is to know that the employees are familiar with the rules and that they comply with them. If a man disobeys the safety rules repeatedly, he must be removed from service, as a menace to his fellow workers' safety.

The superintendent should have at least as much detailed information in regard to the casualties on his division as he maintains in connection with his operating efficiency and he must be enthusiastic about safety work. Records indicate that the division with the heaviest traffic will have a better safety record than a side line where the risks are not so great, because the heavy traffic division organization will be alive to the danger its duties involve.

Grade Crossing Accidents Canadian Problem

W. E. Stokes, superintendent of the Belleville division of the Canadian National, said that the principle of safety on that railroad is well defined in the "Book of Safety Rules" by the phrase which states that "The Canadian National Railways does not expect any employee to take unnecessary chances in the performance of duty." Recently the department of safety on the Ca-

nadian National has been transferred to the jurisdiction of the vice-president in charge of operation and construction. On each of the four regions there is now, or soon will be, a safety engineer who will have charge of the safety program in each respective territory, each engineer reporting direct to his general manager and to the safety headquarters at Montreal.

The safety committees investigate the nature and causes of injuries and conduct features aimed to keep the safety truth in the public mind, Mr. Stokes continued. The injured employee is always invited, after his return to work, to report to the safety committee to explain how the accident occurred and in practically all cases the men injured blame, not the company but themselves. Ninety-five per cent of all avoidable accidents are due to personal habits or individual negligence and not to the physical conditions of the plant or shop. An employee disobeying certain safety rules is given demerit marks under the Brown system of discipline and when he obtains 60 of these, he is automatically relieved of further employment. Perhaps safety committees may seem old-fashioned but in Canada they are found to be very effective, and until something better is introduced, the Canadian policy is to continue along the present lines.

From a superintendent's standpoint, Canadian problems are not within the railways, but with the public at large. With men under the superintendent's jurisdiction, discipline can be used as a preventive measure, but the people can only be persuaded by appeals. The annual increase of motor cars in towns and cities on the Belleville division has added an appalling increase in highway crossing accidents. Motorists insist on striking the sides of trains and smashing gates. When motorists run into gates or disregard watchmen's signals they are reported to the Motor League which consults the driver about the matter. The Provincial police officers are in a position to render service in grade crossing accident prevention and recently a motorist who crossed in front of an approaching train was apprehended by a Provincial officer and hailed into court where the magistrate upheld a charge of reckless driving and punishment was administered.

Supervisor Should Be Exacting in Prevention

Supervisors are absolutely responsible for determining whether a railroad, a division or a shop has a poor safety record with low efficiency or a good safety record with high efficiency, declared W. S. Carr, assistant superintendent on the New York, New Haven & Hartford at Boston, Mass. He pictured the supervisor who is genuinely interested in his job as one who feels that he is actually responsible for every accident occurring under his jurisdiction and stated that the safety feature is today the most outstanding subject of railroading.

He cited two instances of safe operation on the New Haven at Boston. At the Dover Street engine terminal with 357 employees, where 180 locomotives are turned per day, 942 days have passed without a reportable injury. At the Dover Street car yard, with 900 passenger cars handled per day by 346 employees, 69 of whom are women, the last reportable injury occurred 1,027 days ago.

Safety Car Effective on Illinois Central

A safety car and its operation over the road has had more to do with the promotion of safety on one division of the Illinois Central than any other one thing, in the opinion of Frank Walker, trainmaster on that railroad at Clinton Ill. The children look forward to its stop in their community and the parents come to believe in safety through their children's interest.

When a man applies for work as a trainman at Clinton, he is given a book of rules, but the only rule with which the trainmaster personally acquaints him is "Safety is of first importance in the discharge of duty." Returning from the student trips with a letter from a conductor testifying to his eligibility to take a rule examination, the trainmaster asks him what is of first importance in the discharge of duty. If his answer is not "Safety," he is kept as a student until the importance of safety becomes uppermost in his mind. The day is past, declared Mr. Walker, when the best trainman is considered to be the man who can display a hand with some member missing or a body scar as evidence that he took a chance and "got by."

Police Whistles Avert Katy Yard Accidents

The methods employed in the Muskogee (Okla.) yard of the Missouri-Kansas-Texas to eliminate all fatalities for the past 21 months were reviewed by H. Cartwright, engine foreman at that point. A resume of his address follows:

At least one man was killed in Muskogee yard every year, from the time it was built until 1928. During 1928, 637,981 cars were handled, including 53,309 cars interchanged with connecting lines, and industrial switching that produced over 12,000 cars of outbound business. During that year, but one reportable accident occurred, a sprained ankle, which resulted in a switchman losing four days' time. This record was made possible only by every man in the yard being sold on the idea of safety, and by the active cooperation of division staff officers.

Safety in any line of work begins with the employment of the man. The past record of the applicant is carefully scrutinized. Experience has shown that it is a mistake to "take care" of men, who have been cut off, due to reduction of force in other departments, by putting them to work as switchmen without due regard to their qualifications for this work. Of the last 12 men injured in Muskogee yard, 3 were yardmen by vocation, 7 were former firemen, and 2 were road brakemen transferred to yard service, indicating particularly that experience in engine service will not qualify an engineman as a switchman any more than experience as a switchman will qualify a man for engine service.

The maintenance of way department plays an important part in safe yard operation by eliminating conditions that may cause some man to be injured or lose his life. Weeds near tracks should be kept down at all times, and the usual debris that accumulates in the yard should be promptly removed. Tracks should be maintained to a safe standard and switches adjusted and oiled as soon as work becomes necessary. Two injuries in recent years were caused by failure to maintain switches in safe operating condition.

It is an impossibility for a yardmaster personally to observe all of the switching that is performed in the yard, and in his absence the engine foreman is the man who must see that rules and safe practices are followed. This man should be on the alert for unsafe practices at all times, and either handle them for correction at the time or report them to the yardmaster for his handling.

District safety meetings are largely attended, but it was found that the duties of a number of men prevented them from being present at the monthly meetings. To overcome this, a series of short, 30-minute meetings are now held periodically, so timed as to permit all switchmen, enginemen and carmen in yard service, to attend. The maintenance of way department is represented at these meetings by the section foremen.

In switching, it is of primary importance that hand signals be plain and, once given, that they be acted upon in exactly the same manner as given. Too much stress cannot be placed on this matter. Switching by tracks with cars standing too close for safe clearance is a very easy habit to fall into, if not closely watched. To overcome this, clearance markers were placed on each track. Before leaving a track, an engine foreman must see that cars are put in the clear a sufficient distance to leave the track safe for the next man. Blind shoves of tracks are a fruitful source of damage to equipment and personal injuries, particularly where engines are working on both ends of the yard, and it was necessary to assess discipline to break up this practice.

All persons are prohibited from going between moving cars for any purpose. When it is necessary to go between cars, the move is stopped until a proceed signal is given by the man involved, after he comes from between the cars. If a pin cannot be pulled on the working side, the man must cross over and pull the pin from a safe position on the opposite side. A number of accidents have occurred in the past, due to men standing near the end of cars and being thrown off by sudden stops. The safe place to stand is in the middle of the car, and this point has been particularly stressed with gratifying results. A close observance of defect cards has prevented damage to equipment and personal injuries.

Until about a year ago, numerous automobile accidents oc-

curred in handling a heavy transfer business over two important grade crossings, which were not protected by crossing watchmen during certain hours. Movements were made at slow speed, and in practically all cases crews complied with the rules, but accidents continued to occur. A foreman on a transfer engine solved the problem. Tiring of numerous investigations and reports, he purchased a regulation police whistle and used it to protect his moves over these crossings. Noting the results, similar whistles were furnished to every switchman in the yard, and since that time there has not been a single automobile accident in Muskogee yard.

Car-Riders on the Reading Eschew Carelessness

B. H. Bowman, assistant trainmaster on the Reading at Rutherford yard, Harrisburg, Pa., described the steps that have been taken in this classification yard, which has a hump in each direction, to reduce injuries. The operating force consists of 326 men, using 134 engine hours per day to operate the humps, do necessary switching and make up outbound trains. Each hump rider rides from 20 to 28 cuts per each eight-hr. period, coupling each cut to the cars previously classified. Mr. Bowman said in part:

Recently I discovered among some old documents a Book of Rules published by the Philadelphia & Reading Railroad Company in 1875. Years ago, the interpretation generally placed on Safety being of the first importance in the Discharge of Duty was construed to mean safety to equipment and property, while little thought was given to the question of safety to employees. The prevailing opinion was that the law of self preservation was the only safety rule necessary to prevent men from sustaining injury.

Classifying cars over humps, with a constant classification yard grade, is an occupation that is fraught with many hazards from the standpoint of possible personal injury. Some of the principal hazards that are exceedingly difficult to detect and eliminate are defective brake parts, due to being worn, and which the car inspectors cannot always see. Accidents from kicking or grabbing brakes have been materially reduced by insisting that car-riders use pawls and straight brake sticks on the humps instead of stick with a curve at the end where it fits into the brake wheel.

In Rutherford yard there were 16 lost-time accidents during the period from January 1 to July 31, 1929. The average time lost was 8.2 days, with 5 cases resulting from the operation of hand brakes on the hump; 4 cases insecure footing; 2 cases insecure, or missing, hold with hands; 2 cases, foreign body in eye; 1 case, end gate of car falling; 1 case, glass breaking when cleaning engine cab window; 1 case, pushing caboose. During 1920, 1,148,239 cars were handled, 563 cars were damaged and 57 men were injured; during 1923, 1,175,759 cars were handled, 303 were damaged and 42 men were injured, while in 1928, 1,143,248 cars were handled, of which 123 were damaged and 29 men were injured. During periods of low labor turnover, men are giving the best service and the number of cars damaged and personal injuries are very closely related.

Hump riding is a skilled occupation requiring alertness, good judgment and considerable agility. The alert, hustling employee, who has a reputation for good judgment and safety, will seldom be involved in accidents. The chance taker, the thoughtless and indifferent ones are the hardest to reach and are the ones that usually cause trouble. Young men who have been reared on farms and know what a good healthy backache feels like make excellent material. We do not employ men over 30 years of age in train service, or over 25 years of age in engine service. We endeavor to employ men who have clear records, so far as serious personal injuries are concerned, a very important factor. Our employees are drawn mainly from local communities and many from surrounding rural districts.

New men are not permitted to ride cars on the hump until they have spent at least three days under instructions of our best and most careful car riders. New riders are then permitted only to ride cuts which require more than one car rider, for a period of probation. After several days riding in this manner, they are permitted to handle single rider cuts. New men are only worked during daylight hours until such time as they become thoroughly acquainted with the yard.

An important element in preventing personal injury accidents is the maintenance of a clean yard, and one free from obstructions along tracks, such as spilled coal, old ties, rail or other material or car equipment. By co-operation between maintenance of way forces and the operating department in cleaning up constantly, instead of periodically, with the result that no material is allowed to accumulate along tracks where men may get on or off cars, this is accomplished. All close clearances have been eliminated in the receiving, classification and departure yards.

In order to keep the question of safety constantly before our employees, we have a local organization known as a safety and freight claim prevention committee which meets once each month. The monthly meetings are arranged so that the largest number of men from one of the three tricks can attend conveniently. The supervisory forces are permanent members and they attend each meeting, while the train and engine service men attend at least one meeting each three months. Our men are requested to report at once an unsafe condition or practice to their immediate superior. These meetings are enabling us to put the question of safety before the men and keep it active, while the men are responding to this method of educating by taking a very active and constructive interest in this work, which is best attested by their suggestions and recommendations.

The supervisor of safety can not win a lone fight in the reduction of lost-time accidents. He can only secure the interest and enthusiastic support of the supervisory forces in all branches of railroad service. In all cases of lost-time accidents in our territory the particular case is impressed upon the supervisory force with the idea that they might have been able to prevent them if they had approached the employee at the first sign of delinquency. Our yardmasters and conductors are giving the question of safety more careful thought, and are taking more active steps to prevent accidents than ever before.

Discipline Often Aggravates Situation

G. H. Jacobus, superintendent of the Northern Pacific, at Duluth, Minn., spoke on Transportation Service Accidents. An abstract of his address follows:

Some railroads discipline employees for violation of safety rules by actually suspending them from service for limited periods. In my opinion such discipline only serves to aggravate the situation and does not afford any degree of relief. If railroads ever expect to make any material improvement in this situation, employees must believe in the integrity of the supervising officer and co-operate fully with him. An employee who goes on the job in a bad frame of mind, suspicious of the officers and lugging a grouch, is a distinct safety hazard. Officers and employees stand in dire need of knowing each other better. Every supervisor and officer should avail themselves of every opportunity afforded to mingle with the employees, both at social functions and when on the job. I sincerely believe this contact is one of vital importance, and will go a long way towards eliminating that suspicious feeling. There is a fruitful field in the railroad industry for the officer who can deliver the real message.

We all, officers and employees, should come to work with a cheerful mind, free from worry, and with the thought that we are going to co-operate in the full observance of rules and instructions to the end that our company will be well served and that our folks at home will be happy and contented.

When an employee is first appointed to a supervising position, he should be very careful about issuing instructions until he has a full knowledge of his duties, and should carefully cultivate the acquaintance of the rank and file of employees, and not issue instructions until absolutely sure of his ground. Officers should enjoy such a relation with their employees that they will feel free to come to them and openly and fully discuss questions that pertain to their work. A great majority of employees today are persons of education and they appreciate being treated as such or as the officers equal. One of the most respected and successful railroad presidents I know can attribute his success, in large measure, to the fact that he mingles with the employees and has the happy faculty of being able to converse with them in their own vernacular and make them feel at ease.

I sometimes think that the system of discipline where employees get demerits and credits and no actual suspensions, is the proper system. Regardless of the responsibility of the employee, when given actual discipline he becomes somewhat disgruntled and is liable to work in an arbitrary manner when returned to service. Furthermore, with the present system used on railroads, an employee is disciplined for rule viola-

tion but is never given any credit for meritorious service and his personal record goes from bad to worse. If we had a system of merits and demerits where a certain period of good service would entitle the employee to credits and where a certain number of demerits would cause employees to lose their position, all would be interested in keeping their records clear.

When it becomes necessary to assess discipline, the employee, if possible, should be called in and the case discussed, the employee being made to realize and agree that the discipline to be assessed is just and proper. When discipline is assessed against an employee by a jury of his peers, he feels he has it coming to him, takes his medicine and is satisfied that he got a square deal. All such action helps in maintaining a cordial relation between officers and employees.

A. E. R. A. Receives Report on Heavy Electric Traction

THE annual report of the Committee on Heavy Electric Traction was presented to the American Electric Railway Association on Tuesday, October 1, by H. F. Brown, assistant electrical engineer, New York, New Haven & Hartford, chairman of the committee. The subjects which have been under consideration by the committee during the past year are: (1) Protection of contact rail where protected third rail is used; (2) track and third rail bonds for heavy traction; (3) branch line electrification, locomotives and self-propelled cars; (4) operation of articulated trains; (5) train make-up and terminal switching with multiple-unit cars; (6) collection of data on electrified mileage and electric locomotive tonnage for steam roads; (7) third rail and overhead clearance.

To cover the first subject, a revision of A. E. R. A. manual, section W101-15, was submitted with the recommendation that the revised section be advanced to the grade of standard. In connection with the subject of bonds, an attempt is being made to have manufacturers agree to standard dimensions of fundamental characteristics of pin-type bonds and to make comparative tests of various makes of pin terminal, compressed terminal, arc-weld, gas-weld and brazed bond. The tests are now in progress.

The committee has also collected information concerning the effect of rail joint clearance on bond design and recommends that these data be presented to the rail committee of the American Railway Association and that the A. E. R. A. join with the Electrical Section of the A. R. A. in a request to the rail committee to take into consideration the bonding of the rail joint in designing the splice bars. The heavy traction committee has also kept in touch with foreign practice and experimental work in this country covering the use of composition on rail joints to replace bonds. The report states that the information obtained thus far does not indicate the practicability of substituting compositions for copper bonds.

Locomotives and Self Propelled Cars

The committtee has done original and interesting work in connection with the subject of self-propelled cars and locomotives. The first part of this section consists of a tabulation of rail motor cars and trailers used by railroads in the United States and Canada and lists the electric locomotives in service, showing the weight and horsepower of each. Cost data, including first cost and cost of operation and maintenance, has been compiled for 17 railroads covering 27 locomotives. These figures are presented in detail for the different roads and no attempt is made to summarize the results, owing to the wide variation of operating conditions and returns. It is apparent from the inspection of the table that there is a lack of consistency in the returns in several instances, but in this connection the Committee emphasizes the difficulties confronting operating companies in segregating the details of operation of a particular type of equipment.

As general information only, the committee points out several characteristics as deduced from the cost data. For example: The cost of the complete electric locomotive is approximately $200 per engine horsepower. The cost of fuel expressed in terms of cents per kilowatt hour is low and compares favorably with the cost of purchased electric power for similar service. The figures available indicate that the cost of maintenance per year may approximate six per cent of the purchase price of the locomotive. The committee states that the cost of depreciation is a matter of bookkeeping and ranges from three to five per cent of the purchase price.

Operating costs reported show wide differences which are largely due to the variation in class of service and the fact that some locomotives work more hours per day than others. The committee recommends that similar operating figures be compiled for the year ending December 31, 1930, as by that time the field of application and the cost of operation of oil-electric locomotives will have become more clearly defined.

Compilation of Data

Work done by the committee in connection with articulated trains consists of compiling data on articulated train units in service. During 1928, four rapid transit companies in the United States placed 119 units in service, each unit being made up of from 2 to 10 cars.

The study of train make-up and terminal switching with multiple-unit cars consists of assemblying in tabular form the manner in which these cars are operated in heavy suburban service.

Data covering all electric locomotives in the world is revised by this committee every two years. In this report the data have been included on standard size report sheets and are probably more accurate than any compiled previously, as practically all domestic roads have corrected and approved the Association records. The statistics on the foreign roads have been made as accurate and complete as possible, partly by means of data secured from foreign representatives and partly through contact with the foreign technical press.

With regard to third rail and overhead clearances, the report states: Inasmuch as the recommended practice with reference to clearance between the overhead conductor and the moving load established by the A. R. E. A. is somewhat in excess of that now successfully maintained by a number of electrified railroads, it is recommended that the Committee on Electricity of the A. R. E. A. be asked to consider a revision of the wording of the rule which will make the limit nine inches instead of ten inches and recognize the practicability of successful operation under special conditions with less clearance.

FRENCH RAILWAYS have been authorized to construct a total of 1,552 kilometers, or approximately 964 miles, of new lines during 1930. This mileage is to be divided as follows: Nord, 67 kms.; Est, 295 kms.; Paris-Orleans, 390 kms.; Paris-Lyon-Mediterranean 210 kms.; Midi, 384 kms.; State railways, 34 kilometers and Alsace-Lorraine, 172 kms.

Some Factors in the Freight-Car Draft-Gear Problem*

Assumed advantages of increased gear travel discussed—Better maintenance the key to better conditions

By Louis E. Endsley
Consulting Engineer, Pittsburgh, Pa.

THE first railway cars did not have any draft gears but as cars and trains became larger and heavier the need of some absorbing unit between the cars was found necessary. First, a single coil spring was used and for cars that were in use 40 years ago this spring did the work fairly well; but as the railroads came to the use of steel underframes and modern cars, the need of more capacity brought out the friction draft gear, for no longer could the capacity be obtained by a reasonable amount of springs. One real need of a friction draft gear is in the switching of the cars together. Another is the control of the slack in the train that is necessary to start the train. This slack, either controlled or uncontrolled, is necessary in order to start a train—for on all our low-grade railroads most locomotives can haul over the road all that they can start. No slack is necessary in order to stop any train or run it. This may be somewhat of a startling statement but anyone who has given it the thought which it deserves will bear me out in that statement.

The only necessity for slack is in starting; in fact, it would be ideal, in my opinion, if some magic means could be devised to make a hundred-car train one long car after the train was in motion and thus maintain it until it was stopped. However, if the locomotive had to start such a train with no slack it would require a much larger locomotive for the modern train or a reduction of the train size for the present locomotive, so that slack for starting the train is necessary, but it should be draft-gear travel and not free or uncontrolled slack. There is some free slack, such as coupled-knuckle slack, that is always in the present coupler, but the slack around the key and yoke, shortening of the coupler shank, shortening of the draft gear, etc., should be kept to a minimum. It is from these that the excessive slack now exists in freight cars.

This extra slack that is not draft-gear travel is causing much damage to freight cars and lading, and is also requiring extra work to be done by the draft gear. The brake shoes and the draft gear do the same thing, that is, stop the car, and the work required to stop a car from five miles an hour is the same no matter what the means used, so far as work done is concerned. Of course, the brake shoe stops the train when the air is applied, but it takes the brake shoes some 20 to 30 ft. to stop a freight car from a speed of five miles an hour, and we expect two draft gears to do it in 2¾ in. travel of each gear. The car is switched into another car, or a string of cars, and it is stopped by the work of the draft gears or else damage results in some part of the car or its lading.

The draft gear also has to do some work that the brake shoes are not required to do. The brake shoes do not have anything to do with the starting of the train; however, the draft gear comes into use every time a train is started and it is also in use in equalizing the speed of the cars in the train as the train runs over small elevations and depressions in the track. At these times the coupler may be under tension, or it may be under compression, but at all times the draft gear, if working, is under compression and it is expected to equalize and cause uniform speed between two cars next to each other in the train, without damage or excessive pull or buff upon the couplers.

It is obvious to anyone who gives it thought that any excess of free slack that may occur between the ends of two cars will materially increase the damage or work necessary for the draft gear to do when a train either goes into a depression or over a hump in the road, for, in a hundred-car train, where this excess free slack is only one inch per coupler, and counting the coupler slack at ¾ in. per coupler, the run-in and run-out would amount to over 55 ft. in the length of the train. If this could be reduced to a minimum, is it not obvious that the work required of the draft gear would be materially reduced?

What is the Ideal Draft-Gear Capacity?

The draft gear companies have designed a friction draft gear that will take care of the drop of a 9,000-lb. hammer of from 18 in. to 28 in. free fall of the hammer, with a draft gear travel of 2¾ in., and this is about all they have been able to do with this travel. This means that the modern friction draft gear has a capacity of between 15,000 to 24,000 ft.-lb. In the modern freight car, where the A. R. A. Type D coupler is being used, it is safe to assume that any draft gear that closes at 400,000 lb. or less will not damage any part of the coupler or car because the shank of the coupler will stand 400,000 lb., or a little more, without any set of the coupler shank, which is really the weakest point from a compression standpoint. Providing a draft gear could be designed to close at 400,000 lb., there would be no danger of injuring any part of the car until after the draft gear had closed; but in order to have the draft gear close at 400,000 lb. the initial pressure necessary to start the draft gear to close, in my opinion, would have to be approximately 300,000 lb., because I do not believe that you can, with angles, springs and friction surfaces, design a draft gear that will pick up more than 100,000-lb. in a 2¾ in. travel and be sure of releasing at all times.

If a draft gear is designed, as I stated above, with an initial pressure of 300,000 lb., it would be of no value in the starting of a train as it would be a solid block of

* Abstract of a paper presented before the Railway Club of Pittsburgh, Pittsburgh, Pa., September 26, 1929.

metal; under this condition, however, it would give a capacity of almost 104 in. of a fall of the 9,000-lb. hammer before it would close at 400,000 lb. If we figure on a freight-car draft gear that should have a capacity which will be available in the starting of the train, in my opinion the initial starting point should not be over 40,000 or 50,000 lb. If the initial starting pressure is 40,000 lb., and the slope is a straight line, the final pressure will be only approximately 150,000 lb., with an average pressure of 95,000 lb. If a greater final pressure is obtained the draft gear may stick and not release because there is a limit to the slope of the pressure and travel line in the design of a friction draft gear in the present pocket and travel.

If a gear is made, according to this assumption, it will just close with a fall of the hammer of 28 in. free fall and 2¾ in. draft-gear travel. This is near the limit at which the modern friction draft gear can act. It has been said that 100,000 lb. initial pressure can be used and a final pressure of 200,000 lb.; this would have almost the same slope line between pressure and travel. This gear would have a capacity of 46 in. fall of the 9,000-lb. hammer. With a great many locomotives this 100,000 lb. starting pressure would be equivalent to a solid block. If the draft gear has a capacity of approximately 30 in. fall of the 9,000-lb. hammer which is the gear named above with 40,000 lb. initial pressure, it will take care of a switching speed of approximately five miles an hour for a loaded 50-ton car and a little less than four miles an hour for a 70-ton car. This may be a reasonable switching speed and is maintained in some yards. If a draft gear of this capacity is maintained properly it should handle practically all conditions of train operation that may arise in a train of 50-ton cars without damage to the underframe of the car provided the slack, or free movement, is kept at a minimum. There is, however, some doubt in my mind with regard to the 70-ton and larger car.

What Increased Gear Travel Would Accomplish

There is a way that the capacity of the draft gear can be increased materially and that is to increase the travel of the gear. As an illustration, let us assume that the draft-gear travel is increased to 4⅛ in., which is just 50 per cent more than the present draft gear, and the slope of the line of travel and pressure is maintained as in the assumed draft gear that had a starting pressure of 40,000 lb. and a closing pressure of 150,000 lb. with a 2¾ in. travel. In this assumed gear the initial pressure is taken as 40,000 lb. and the final pressure would be 200,000 lb. Now this gear will have almost twice the capacity of the 2¾ in. gear, or a total fall of the 9,000-lb. hammer at the closing point of 55½ in.

There are some changes involved if the travel of the draft gear is increased; one is the air hose connnection which might have to be about one inch farther out and up; another is the shank of the coupler, which should be lengthened about three or four inches; also, a longer pocket is needed for the draft gear in order that larger springs could be used. These changes are not difficult and do not involve much expense or trouble. The saving in damage to our large cars and lading would more than pay for the cost. This extra travel is not as complicated as it seems; in fact, today there are many cars that have a travel of the coupler equal to or greater than the above mentioned travel; however, this is due to a considerable amount of slack which is not draft-gear travel. Therefore, if the draft gear travel were increased and the maintenance of the draft gear were carefully followed, there is no doubt in my mind but that the present hose end arrangement could be maintained; however, the increase in the length of the coupler shank is made necessary by the limited space between the yoke and the striking casting.

Draft Gear Maintenance Has Been Neglected

The draft gear, in many cases, has not had the attention it should have had. No repairs have been made, in some cases, until the coupler has pulled out or the sills have been bent or some major operation has been necessary. Yet the railroads have for years watched very carefully the air brake and brakeshoe arrangement and felt that they saved many dollars by these systematic repairs. I am of the opinion that even a greater saving could be effected if the draft gear was watched as carefully and kept in repair with the minimum amount of slack.

As long as the present 2¾ in. travel is maintained I believe the modern friction draft gear for freight cars should have not over 50,000 lb. initial starting pressure; also that the total fall of the 9,000-lb. hammer of 24 in. should not produce over 400,000 lb. pressure. This is equivalent to 18,000 ft.-lb. of work. Added to this will be the underframe capacity of about 4,000 ft.-lb. Also, I believe that the draft gear should stand about 600,000 lb. pressure without very much shortening. I selected the 600,000 lb. pressure because if that amount is produced in a static machine, or a few times in an impact machine, the coupler shank will shorten about one inch. I do not believe it is necessary to produce the strength of the coupler shank, because it is a waste of metal and would occupy valuable space that could be better occupied by springs or wearing surfaces. I mentioned above the capacity of the underframe; I mean by this that if a freight car with 30 sq. in. of metal in the center sills was pressed at both ends by force of 400,000 lb. the work necessary would be equivalent to a fall of the 9,000-lb. hammer of five inches. In other words, the give of the underframe up to a pressure of 400,000 lb. adds five inches to the capacity of all draft gears.

Draft Gear Design

It is my opinion that we have two roads open to us: The draft gear should be designed to have a capacity that will be above that required for any switching speed that may be used; or, in case that is not possible, we should have something like a fuse block in an electric circuit that will blow out if it is overloaded.

In order to make this clear, let us assume that we have a box car that is loaded and the whole car and load weighs 150,000 lb. A blow of two cars switching together of 300,000 lb. will do very little damage to either the car or the load, for the pressure between the cars per pound of weight will only be two pounds. If an impact that is equal to 1,200,000 lb. should occur between these same two cars, each pound of car and load would have an eight-pound force upon it and damage to the car and lading would result if it is a box car with fragile merchandise in it.

If we could limit this force by some means to a maximum of 600,000 lb. the force per pound of load and car would be four pounds. The ideal method would be to have some part in the draft gear arrangement that would give way at a pressure of approximately 600,000 lb., after one or more blows, depending upon their severity, and would be destroyed and then could be replaced. The value of this so-called fuse block would depend upon how many foot-pounds of work could be absorbed before its usefulness was gone and it had to be replaced. It is very easy to figure where such a fuse block could be

inserted so as to take a total set of ½ in, or more at a pressure of 600,000 lb., and yet not be affected at a load of 300,000 or 400,000 lb.

Just as an illustration of what could be done, assume that the coupler and draft gear casing are of the same strength and that when the draft gear is solid the distance from the head of the coupler to the back follower block is 42 in. Such an arrangement can be shown to stand one blow between two tank cars that are equipped with no dome and full of oil at a speed of 8 miles an hour with a maximum pressure of only 600,000 lb. if the draft gear has a capacity of 24 in. fall of the 9,000-lb. hammer. This same arrangement will stand 10 blows at 5.6 miles an hour, 100 blows at 5.2 miles an hour and 100,000 blows or more at 5 miles an hour before all the set of ½ in. is taken up in the 42 in. of metal between the back stop and the coupler head. The corresponding impact speeds will be greater in coal cars and box cars where the load can shift.

I have felt for years that a good way to build tank cars would be to equip them with a dome on each end instead of one dome at the center. When this double-dome tank car is switched, it will allow all the load to shift and would be equivalent to increasing the capacity of any draft gear that might be in the car. It is easy to figure a dome on any modern tank car that will more than double the capacity of the draft gear; in other words, increase the switching speed 50 per cent with no increase in force between the cars.

For years there has been a demand for simple means to determine the value of different draft gears in a testing laboratory. The rivet-shearing test has been used as has a chronograph that draws a line upon a revolving drum. With this latter instrument it is necessary to draw tangents to the curves in order to determine the force during the impact. One other means that has been used is the measurement of the indentation of steel balls in steel in order to determine the maximum force and closing point of the gear. All of these methods are somewhat complicated.

Some years ago I designed an instrument that would measure the pressure of any fall of a 9,000-lb. hammer upon a draft gear and since that time three or four of these instruments have been placed in service. The instrument consists of a frame which is secured to the moving head of the hammer. In this frame is a vertical steel rod which is free to move within the frame. The rod is suspended in the frame between two opposing coil springs to equal stiffness. On the lower end of the rod is a bell crank; one end of this is connected to the vertical rod and the other end carries a stylus which draws a line upon a metallic-coated paper. I was able to calibrate this instrument to within a three per cent error.

The method of calibrating was to cut a piece of cold-rolled steel one inch in diameter into blocks of one inch in length. Blocks were taken from the end of the original piece and also from the center calibrating them in a static testing machine for different amounts of set. By taking these one-inch blocks and placing them on the machined surface of a block resting on the draft gear and dropping the hammer until the round block shortened approximately .05 to .06 in. at one impact, a reading of the stylus on the instrument checked almost identically with the reading of the static load as obtained in the static machine.

This was carried out on two machines and the maximum error was less than two per cent from the average line drawn through all tests made, which shows that the results are very close. I do not say that the same pressure was necessary to produce set in a static machine as was necessary to produce the same shortening in an impact blow, but the results are directly comparable and a yard stick is obtained. This instrument will show what is required of a modern draft gear:

First, what pressure will a one-inch fall of a 9,000-lb. hammer produce? This will be the starting or initial pressure of the draft gear.

Second, what height of drop will just produce 400,000 lb. pressure?

Third, what damage or shortening of the draft gear will be produced under a pressure of 600,000 lb.?

There are other things which must be found out about the draft gears, viz., How long will they maintain their initial capacity, or how long will they protect the car a reasonable amount? This life of a draft gear may be obtained in a drop-hammer test but I am of the opinion that road conditions are the only ones which will finally determine the life of the different draft gears.

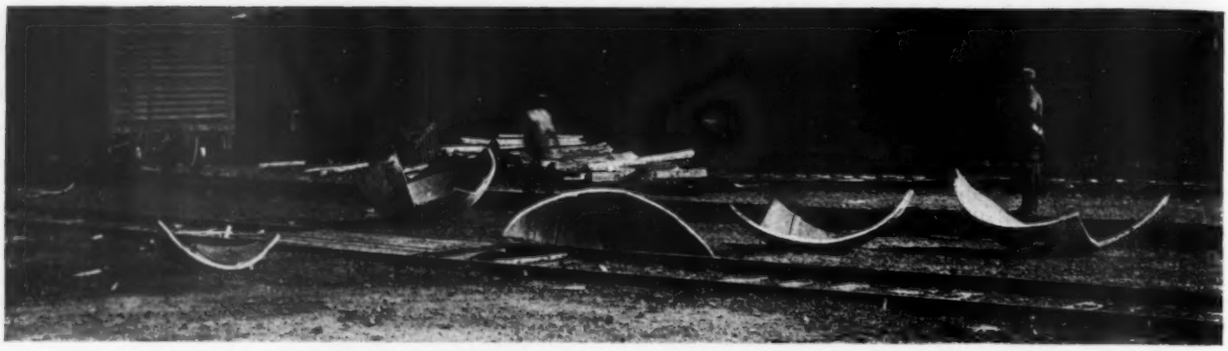
One of the things that is quite often brought up in the sale and purchase of draft gears is the question of guaranteeing them. Some railroads have asked for a guarantee of 10 years. A draft gear that will last 10 years in modern car operation without repairs will be a very expensive gear, for something else besides the long-life gear is going to do the draft-gear work. A solid block of metal would last for 30 years or more but would not protect the car.

The draft-gear problem on a 70-ton car will not be solved until the gear designer is allowed more travel, which means more space in which to put the draft gear. Also, after the car is put in service you railroad men must keep it in repair and maintain at all times a minimum of slack. The only way that this can be done is by a well organized system of inspection and repairs.

Helium Tank Tested at Milwaukee

A NEW type of spherical vessel for the transportation of helium gas was tested on September 10 at Milwaukee, Wis., by the A. O. Smith Corporation. The tests, including the staging of a train wreck followed by an actual test to destruction of the vessel, were witnessed by the Tank Car Committee, the Bureau

Flat Car, Loaded with a Special Spherical Helium Gas Container, Running Off the End of a 25-Ft. Embankment



The Container Burst at a Pressure of 4,500 Lb. Per Sq. In.

of Aeronautics, U. S. N., Corps of Engineers, U. S. A., the Bureau of Explosives, the Goodyear-Zeppelin Corporation, and the Wisconsin State Industrial Commission, as well as a large number of railway officers, consulting engineers, and insurance inspectors.

The vessel itself was a steel sphere, 72 in. in inside diameter, formed of two halves of ½-in. plate welded together by the Smith welding process. It ultimately failed under a hydrostatic pressure of 4,500 lb. per sq. in., after undergoing virtually 80 hours of severe battering. For three days it had previously been continuously hammered by pneumatic hammers while under a hydrostatic pressure of 1,250 lb.

In the finished design, six of these tanks of slightly larger diameter and designed for the transportation of helium gas at a pressure of 2,000 lb. per sq. in., are to be mounted on specially designed gondolas.

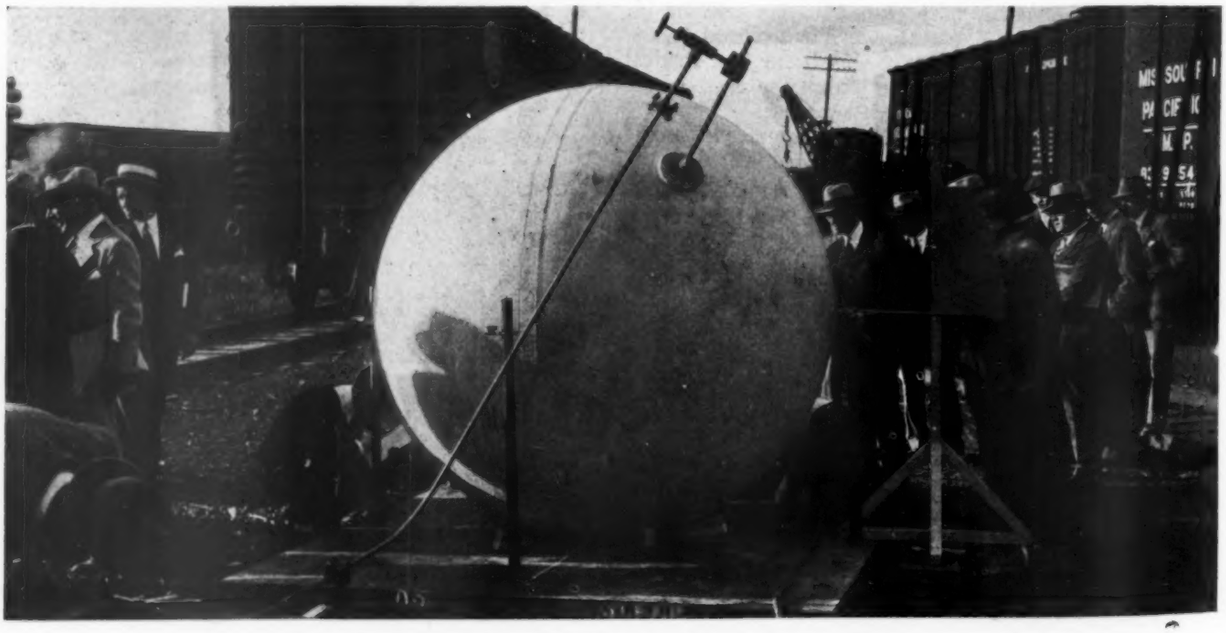
To simulate the conditions that would arise should such a car be wrecked an actual wreck was arranged. The sphere then under 1,250 lb. air pressure was lashed to a flat car, and cylindrical steel sections weighing 14,500 lb. were lashed before and behind it. The car traveling at a high rate of speed, was run off the end of a 25-ft. embankment and completely wrecked, but the sphere was undamaged.

Following this test, the air was let out of the vessel and it was filled with water for the final tests. After undergoing repeated stress tests, hammer tests and tests to the elastic limit of the steel, with results that were carefully checked by the Tank Car Committee, the pressure was rapidly raised. The big steel sphere began to swell like a rubber ball after the elastic limit was passed. At the last measurement that could be taken, after a pressure of 4,000 lb. had been reached, the sphere had increased in circumference 17 in.

Under a steady hydrostatic pressure of 4,500 lb. per sq. in., the vessel finally failed. The manner in which it fractured was also unusual and seemingly testified to the great ability of the spherical shape to resist pressure for this type of service.

The vessel broke up into nine pieces, ripping from end to end much as an orange would be peeled. All the fractured sections were fairly large with the weld across the widest part of each one. In no place did the break follow the weld. The steel in the formed heads at the axis perpendicular to the weld section was greatly thinned down to a minimum measured thickness of 1.05 in., as was recorded by observers.

The final results and the conclusions from the test are expected to be incorporated in reports to be issued by the A. O. Smith Corporation and the Tank Car Committee.



Ready for Final Hydrostatic Test Subsequent to the Wreck

Hill Retires as Chairman of Great Northern Board

His resignation signalizes the close of a half-century of Hill management of the Great Northern

LOUIS W. Hill, who 22 years ago succeeded his father, James J. Hill, as president of the Great Northern, retired as chairman of the board of that railway at a meeting of the directors at St. Paul, Minn., on October 10. Mr. Hill was re-elected as a member of the board of directors and as a member of the executive committee and the directors abolished the position of chairman of the board. Mr. Hill also continues as president of the board of trustees of the Great Northern Iron Ore Properties.

At its meeting the board of directors adopted the following resolution regarding Mr. Hill's retirement:

"Whereas, Mr. L. W. Hill, after more than 17 years of service as chairman of the board of this company, has asked that he be not re-elected as chairman of the board and that he be relieved of the active duties attendant upon that position, but has consented to accept re-election as a director and as a member of the executive committee;

"Now, therefore, be it resolved, that it is the feeling of the members of this board that Mr. Hill's wishes should be respected and complied with and that he is fully justified in laying down his active duties as chairman of the board and that he be not re-elected as chairman.

"Resolved, that we express our appreciation of his consenting to accept re-election as a director of the company and as a member of the executive committee, and that we hope to have the benefit of his judgment and experience for many years to come."

Louis W. Hill

The retirement of Mr. Hill marks the end of a continuous period of 46 years during which James J. Hill and his son were in executive direction of the Great Northern and its predecessor companies, either as president or chairman of the board. If we include the service of James J. Hill as general manager of the St. Paul & Pacific and vice-president and general manager of the St. Paul, Minneapolis & Manitoba this period of years is increased to more than a half century.

"After 36 years of work for the Great Northern I feel that I deserve a rest from the responsibilities involved," Louis W. Hill said in commenting upon his retirement. "My father advised me to retire from active participation in railway affairs when I reached the age of 40 years. That time came and passed 16 years ago but now the way is open to me to do what I have desired."

In discussing the future of railways in the general development of modern transportation, Mr. Hill expressed the belief that motor vehicles and airplanes will eventually bring greater profits to the railways than they will take away. Continuing this thought, he said:

"American railways have passed their era of great construction activities. The main lines are pretty well established now and the universal use of motor vehicles has made it unnecessary to build so many of the expensive and oftttimes unprofitable feeder lines which formerly were necessary to develop new territory.

"Automobile trucks now bring their loads to the railway lines for a distance of 25 to 50 miles on either side without difficulty. While passenger business has been lost to the motor car, I feel that freight increases, direct and indirect, will make up that loss.

"When the time comes that the farmers of America again can make a regular and assured profit on their operations, the railroads and the entire country will make a great advance in prosperity. Agriculture is still the great foundation of this Northwest territory but it deserves a larger share of financial reward than it has been receiving."

Mr. Hill expects to devote a greater amount of time to his personal interests. These will include the task of gathering together a collection of the letters, addresses and writings of his father with a view to the preparation of a new biography which will contain some of the personal and human interest experiences of his father's career which have not hitherto been published.

Mr. Hill was born at St. Paul on May 19, 1872, and after graduation from Yale University in 1893 he immediately entered the service of the Great Northern as a billing clerk. After serving in a number of other minor positions he was promoted to assistant to the

president in 1898. From 1899 to 1903 he served for varying periods as vice-president and president of a number of Great Northern subsidiaries, including the Minneapolis Union, the Minneapolis Western, the Spokane Falls & Northern, the Willmar & Sioux Falls, the Eastern Railway of Minnesota and the Sioux City & Western. From 1901 to 1903 he was also assistant to the president of the Great Northern.

In 1903 he was elected first vice-president of the Great Northern and four years later, in April, 1907, upon the retirement of his father as president and his election as chairman of the board, he took over active management of the road as its president. On July 1, 1912, when James J. Hill relinquished the chairmanship of the board of directors, Louis W. Hill was elected to succeed him, a position he held continuously until his retirement on October 10. In addition he had served as president of the Great Northern from March, 1914, until the latter part of 1919.

S. A. L. Refinancing Plan

THE stockholders of the Seaboard Air Line on October 12 approved the company's refinancing plan (*Railway Age*, June 1, and June 8, pages 1309 to 1356). This plan will, therefore, become operative provided the approval of the Interstate Commerce Commission is secured. The plan, as originally announced, was contingent upon the deposit by their holders of virtually all of the company's outstanding 5 per cent adjustment mortgage (income) bonds. To date in excess of $22,300,000, out of a total of $25,000,000, of these bonds have been deposited with the trustees.

The plan provides for a change in the authorized common stock of the company from 727,200 shares (those of which now outstanding have a par value of $100) to 3,227,200 shares of common stock without par value. The stock of the company, under the plan, would consist of:

22,800 shares of 6 per cent preferred
250,000 shares of 4 per cent preferred
3,227,200 shares of no-par common.

Existing common stock of $100 par value would be exchanged share for share for the proposed no-par common.

The adjustment bondholders, according to the plan, will receive, in exchange for each $1000 income bond, the following:

$500 of first and consolidated mortgage 6 per cent bonds (1945).
15 shares of no-par common stock.
10 warrants of authority to subscribe for that number of no-par common shares at $30 up to June 1, 1931, and until June 1, 1934, at $40 a share.

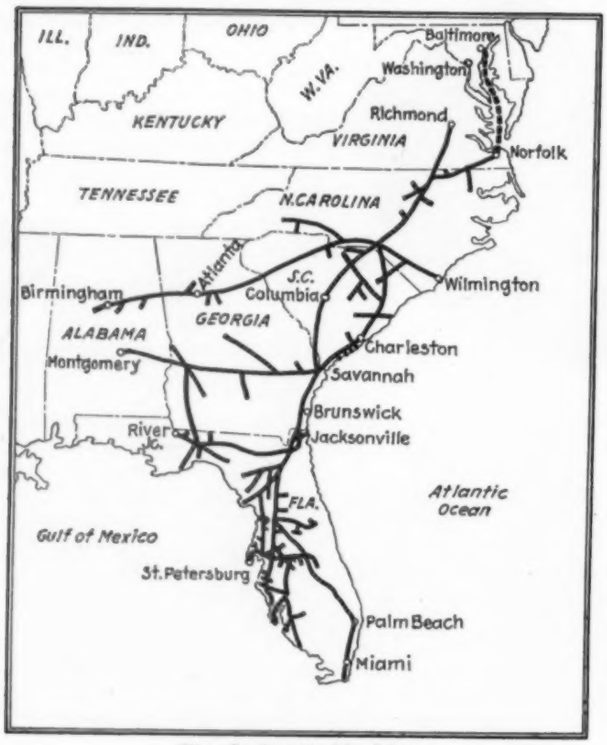
Accumulated interest on the adjustment bonds up to August 1, 1929, totaled $5,000,000 and, in the event that all these bonds are deposited, the company will achieve a debt reduction of $17,500,000 ($25,000,000 of adjustment bonds plus $5,000,000 interest, less $12,500,000 of consolidated mortgage bonds exchanged therefor).

In addition, if the plan is consummated, certain creditors of the company, including the United States Treasury, have agreed to extend maturity dates so as to reduce materially maturities falling within the next five years. These maturities now total $38,643,111, excluding bank loans of more than $2,000,000 and equipment obligations. Extensions to be made possible, if the plan is approved, will reduce this total to $21,268,583. Furthermore, the improved credit position of the company, it is believed, would make possible other extensions or advantageous refinancing, still further reducing early maturities which would have to be met with ready funds.

In addition, to strengthen its position yet more, the company proposes to raise $20,000,000 through the sale of its no-par common stock. This stock would be offered to present stockholders, common and preferred, at $12 per share, on the ratio of two of the new shares for each existing share held. An offering at the same price is made to adjustment bondholders who offer their holdings in exchange, on the basis of two of the new shares for each of the 15 shares which they will receive in partial compensation for each $1000 bond exchanged. The stock issue will be underwritten by Dillon, Read & Co., and Ladenburg, Thalmann & Co.

Co-incident with the announcement of the approval of the plan by the stockholders, R. L. Nutt, chairman of the board of the company, announced his resignation and W. H. Coverdale, of the engineering firm of Coverdale & Colpitts, was elected to succeed him. Mr. Nutt, who will remain with the company as a director, has been in the service of the Seaboard for 37 years. Born in North Carolina in 1873, he entered the service of the S. A. L. as a clerk, rising through the positions of assistant secretary, assistant treasurer, secretary and treasurer to vice-president, from which position he was elected to the chairmanship of the board of directors in 1927.

Mr. Coverdale was born in the Province of Ontario in 1871 and, after nine years of service in the engineering department of the Pennsylvania, began practice as a consulting engineer in New York. His firm serves as consulting engineers for a number of railways and industrial concerns and has been intimately associated with the Seaboard Air Line. Mr. Coverdale is president of the Canada Steamship Lines, Ltd., chairman of the board of the Pierce Petroleum Corporation and a director in many companies.



The Seaboard Air Line

Acquisition of some $10,000,000 of S. A. L. securities, including a substantial portion of the holdings of the late president, S. Davies Warfield, by a group of investors has been announced. This group has elected the following new directors of the company: Messrs. Coverdale & Colpitts of the engineering firm of that name; P. S. Arkwright, president, Georgia Power Company; H. C. Couch, president, Arkansas Power & Light Co., Louisiana P. & L. Co., and Mississippi P. & L. Co.; E. H. Yates, vice-president, Southeastern P. & L. Co. and Alabama Power Company; Oscar Wells, president, First National Bank of Birmingham, (Ala.); L. H. Windholz, president, Pender Grocery Company, Norfolk, Va.; Robert Lassiter, manufacturer, Charlotte, N. C.; G. S. Franklin, of the law firm of Cotton & Franklin, New York; and Norman H. Davis, financier, New York.

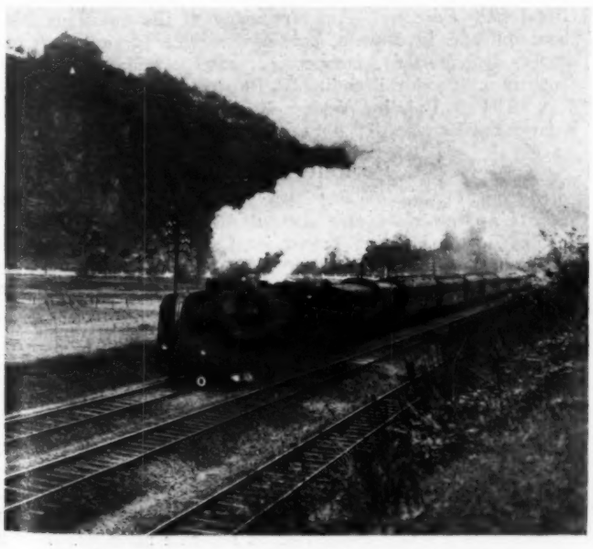
Readjustment of the financial structure of the Seaboard was necessitated by the imminence of substantial debt maturities, coupled with the great decline in earnings resulting from sub-normal business conditions in certain sections of the South which brought 1928 operating revenues down to a total of $9,779,647 less than that of 1926.

As a result of rigid economies and increased operating efficiency, however, the company was enabled during 1928 to report a surplus over fixed charges, but this surplus was insufficient for the payment of interest on its adjustment (income) bonds, interest upon which is cumulative.

Development of Plan

The refinancing plan was developed by the company in co-operation with the adjustment bondholders' committee for the purpose of bringing about a reduction in fixed charges; securing a postponement of the maturity date of some obligations establishing a capital structure of the company on a basis to place it in a better position to meet future financial requirements; and to provide additional capital, both for purposes of additions and betterments and refinancing, from the sale of common stock, rather than fixed-interest obligations. The net railway operating income of the company for the first eight months of 1929 totaled $973,000 more than that of the same period last year.

* * *



Dresden-Munich Express on the German Railways

Looking Backward

Fifty Years Ago

The Springfield, Jackson & Pomeroy [now part of the Detroit, Toledo & Ironton], extending between Springfield, Ohio, and Jackson, 108 miles, was sold on October 1 under foreclosure of mortgage. It was purchased for the account of the Columbus Rolling Mill Company for $443,000 to protect that company's claim for iron furnished to the railroad.—*Railroad Gazette,* October 17, 1879.

Of the 41 railways in Michigan represented by distinct corporations only five paid any dividends during the past year. Five others failed to earn enough to pay operating expenses, nine defaulted entirely in their interest, seven paid only a part of their interest and 18 failed to earn their operating expenses, interest and rental.—*Railway Age,* October 16, 1879.

At a meeting in New York on October 13 the stockholders of the Chicago, St. Louis & New Orleans [now part of the Illinois Central] voted to change the gage of the road from 5 ft. to 4 ft. 8½ in. It was also decided to reduce the grades to admit of the running of freight trains of at least 25 cars each way over the entire length of the road and to devote the net earnings of 1879 and 1880, over and above interest charges, to this purpose.—*Railroad Gazette,* October 17, 1879.

Twenty-Five Years Ago

J. Samuel Pyeatt, heretofore chief clerk to the manager of the Missouri Pacific, has been appointed assistant to the general manager of the Pere Marquette.—*Railway Age,* October 21, 1904.

The highest recognition possible has been given to the Baltimore & Ohio exhibit by the jury of awards in the transportation department of the World's Fair at St. Louis. The railroad has been awarded the special gold medal for the best, most complete and attractive exhibit in that department and a grand prize and gold medal in the group of engineering and architecture in the department of liberal arts for the model of the new union station at Washington.—*Railway Age,* October 21, 1904.

Government control of Canadian Pacific rates depends on the final determination of the meaning of the phrase "capital actually expended in the construction of the railway." Under the railway's charter the government was to have power to fix its rates when the net income of the road should exceed 10 per cent per year of profit upon the capital actually expended in the construction of the line. The government contends that the road has reached this position, while the company maintains a contrary view.—*Railway Age,* October 21, 1904.

Ten Years Ago

Ralph Budd, vice-president of the Great Northern, has been elected president, succeeding Louis W. Hill, who retains office as chairman of the board of directors.—*Railway Age,* October 20, 1919.

Regardless of any congressional action which may or may not be taken before January 1, 1920, the railroads will be handed back to their owners December 31 by the Railroad Administration, according to a statement by Director-General Hines at a conference of the officers of the Central, Western, Southwestern and Northwestern regions in Chicago on October 16.—*Railway Age,* October 20, 1919.

The question of supply of railroad fuel in the event of the coal strike which is threatened for November 1 has been considered by the Division of Purchases. It is understood that most of the roads have not a reserve supply which would protect them for many days and that they were urged to do as much as possible in the way of accumulating a reserve without engaging in competitive bidding against each other for the available supply of free coal.—*Railway Age,* October 20, 1919.

Communications and Books

"Burdensome" Freight Rates

TOLEDO, OHIO.

TO THE EDITOR:

This letter relates to Statement No. 29111, which is a report to the Interstate Commerce Commission from its director of statistics, entitled "Freight Revenue and Value of Commodities Transported on Class I Steam Railways in the United States, Calendar Year, 1928."

I submit herewith Tables A and B, based upon Statement 29111, which are intended to emphasize, in a non-technical way, certain features contained in the statement. Table A shows the relation of each to the aggregate value at destination of the six principal classes of commodities transported, together with the

TABLE A

ICC Class	Representative Item	Current Market Price	Unit	Freight
590	Studebaker Commander-6—1928	$1,600.00	each	$67.00
513	Steel truss bridge, erected	6.50	100 lb.	0.21
450	Gas	0.22	gallon	0.02
430	Southern pine (W)	70.00	MBM	11.00
300	Bituminous coal (Detroit)	7.83	ton	2.27
90	Cotton (W)	18.57	100 lb.	0.58
210	Fresh meat	0.38	pound	0.01
10	Wheat (W)	1.08	bushel	0.13
290	Anthracite coal (Detroit)	15.50	ton	2.37
50	Flour	0.60	12 lb. sack	0.03
452	Cylinder oil	1.00	gallon	0.02
20	Corn (W)	0.80	bushel	0.11
250	Butter	0.54	pound	0.01
640	Fertilizer (W)	34.00	ton	8.49
670	American Std. print calico (W)	1.00	10 yds.	0.01
690	Bull Durham	1.20	12 sacks	0.01
240	Eggs	0.41	dozen	0.01
220	Cured meat	0.50	pound	0.01
470	Sugar	0.64	10 lb.	0.04
540	Portland cement (W)	2.08	barrel	0.50

(W) Wholesale price delivered to manufacturer, contractor, or middleman.

TABLE B

Commodity Class	Value at Destination: Relative Weight	Relative Freight
	Per Cent	Per Cent
Animals	12	2.93
Manufactures	53	4.54
Less-than-carload	11	6.94
Agriculture	11	10.01
Forests	4	12.96
Mines	9	21.30
Total	100	7.08

relation of the freight paid to the value at destination of each class. The table shows that animals and products of animals which, for the most part, are food when they reach the consumer, represent 12 per cent of the aggregate and the freight paid is 2.93 per cent of the value. Again the class which comprises more or less highly manufactured commodities represents 53 per cent of the aggregate and for this class the relative freight paid is 4.54 per cent.

Statement 29111, as prepared, shows freight costs and values of commodities per ton which, to the lay mind, have little significance. In Table B, I have restated 20 representative items of 20 sub-class groups of commodities in terms of more commonly used units, together with the current market retail price or wholesale price, as the case may be. The 20 sub-class groups I have chosen are not picked at random. Each, in terms of total value at destination, represents values in excess of $300,000,000 and all are fairly well known articles of commerce. Retail prices, where used, are drawn from a recent number of the Bureau of Labor Statistics "Monthly Labor Review."

Certainly the Interstate Commerce Commission is to be commended for studies of this sort which, if taken into consideration with studies along the same line, but in more detail, made by the Bureau of Railway Economics, indicate the way to rational adjustment of the freight rate structure. The vast majority of people in this country, and the press, have been led to believe by anti-railroad agitators that railroad freight rates are burdensome and the cause of depression in some fields of business and commerce. Studies along the lines of Statement No. 29111 and those referred to above, made by the Bureau of Railway Economics, if presented in some popular way, should help an ordinary person to understand the truth about transportation costs.

W. M. HOOVER,
Toledo Terminal Railroad.

Books and Articles of Special Interest to Railroaders

(Compiled by Elizabeth Cullen, Reference Librarian, Bureau of Railway Economics, Washington, D. C.)

Books and Pamphlets

The Control of Traffic on Roads. First Report, by Royal Commission on Transport. Pages 15-16 contain use of the word "locomotives" in an unusual way. Advocates abolition of grade crossings, the cost to be borne partly by railway companies, partly by highway authorities, and partly by the "Road Fund," p. 38. 54 p. Pub. by H. M. Stationery Office, London, England. 1 shilling.

Library Catalog, Foreign Books Department, First Chiao-Tung University, compiled by Wolfe S. Hwang. For railway material see references in subject index, pages 369-370, while in the periodical lists, pages 322-323 and 342 are familiar friends like *Railway Age,* and *Railway Mechanical Engineer.* This library was opened in the spring of 1918 and much careful work has evidently been done since then in assembling and making available the books and periodicals relating to many subjects that range from "Academic Education" and "Accounting" through "Handball," "History," "Household Management," "Railways," "Trussed Bridges," to "Wordsworth's Poems" and "Zoology." 380 p. Pub. by Nanyang University Library, Shanghai, China. $1.

The Michigan Central Railroad, by Charles E. Fisher. An interesting "experiment" consisting of a narrative history from the inception of the project to and including 1876 and containing summaries of the contents of annual reports from 1847-1876 inclusive. Illustrated. 31 p. Pub. by Railway and Locomotive Historical History, Boston, Mass., as its Bulletin No. 19. $1.

"The O'Fallon Case"—List of References 1924-1929. Revision and enlargement of list previously mentioned in this Booklist. 21 p. Pub. by Library, Bureau of Railway Economics, Washington, D. C., *Apply.*

Railroad Facts No. 7—A Yearbook of Railroad Information (Final 1929 Edition). Answers many of the questions asked about mileage, investment, earnings, service (freight and passengers transported), competition, rates, earnings, and what constitutes "good railroading." Illustrations and charts. Indexed. 94 p. Pub. by Western Railways Committee on Public Relations, Chicago, Ill., *Apply.*

Periodical Articles

Hoover May Tackle Antiquated Trust Laws—Expected to Take Up Matter In His Annual Message, by Theodore G. Joslin. Boston Evening Transcript, October 3, 1929, pt. 3, p. 3.

A Fourteen-Pound Wardrobe That Flew 'Round the World. And was worn ten months. Seemingly "gone are the days" of ladies with twelve trunks. Illustrated. Vogue, October 12, 1929, p. 112, 148.

Marquette Tries Concrete Roadbed. Recent experiments. Business Week, October 12, 1929, p. 32.

Railway Conditions in Bulgaria, by Samuel Green. Brief historical sketch 1866-date, map of present lines and survey of present performance. Commerce Reports, October 14, 1929, p. 121-123.

Transport in All Its Phases. Summary of recent address of Sir Josiah Stamp who brought out the necessity of viewing transport as a whole instead of as separate methods. Modern Transport, October 5, 1929, p. 10, 12, with editorial comment "The Broad View of Transport," p. 1.

Odds and Ends of Railroading

Speaking of Railway Operations

Doctor—"I'll give you a local anesthetic if you think it necessary."

Railroad Man—"Well, Doc, if it's going to hurt, you better cut out the local and run me through on a sleeper."

Record Spiking Hammer

The Sunbury division of the Pennsylvania is proud of its prize spiking hammer. For 28 years the hammer has been in constant service, the last ten of which have been spent in the hands of F. E. Fedder, trackwalker.

Stepping Along

Another rapid journey from Europe to the Pacific Coast was that of Richard J. Burke. He traveled from Germany to Los Angeles in less than six days, via the Graf Zeppelin to New York, Pennsylvania, Transcontinental Air Transport and Atchison, Topeka & Santa Fe beyond.

Why A "Ladies' Car?"

NEW YORK.

TO THE EDITOR:

Referring to the item about a pass being good in the "Ladies' Car," this is no doubt due to the following:

In the 70's and early 80's, many tickets were sold at reduced prices to immigrants and others, good for riding in the smoking car only. The cars in which no smoking was allowed were called the "Ladies' Cars"—therefore the reading of this particular pass. Presumably no such distinction about smoking can be made today!

F. J. LISMAN.

An Interesting Comparison

A locomotive which cost about $6,000 and which was in service in 1875, and three old coaches, recently were on display in Seattle, Wash., as examples of pioneer travel luxury on one of the northwestern railways. The entire train equipment represented an investment of not more than $15,000. Each day a 61-hour Chicago-to-coast train drawn by a $275,000 electric locomotive and consisting of eleven modern coaches representing an expenditure of $450,000 more, stopped beside the ancient train so that the interested passengers and onlookers could get an idea of the progress in transportation facilities during the last half century.

Rows Boat 115 Miles

Captain Elroy E. Carney, carpenter of the New Haven in South station, Boston, Mass., established a record for himself recently, when he took a few days off and rowed a 13-ft. boat a distance of some 115 miles between Winthrop, Mass., and Woods Hole, during three days and three nights. He is 68 years old and can't swim a stroke. Most of the distance was made in rough water, and although the "captain" planned to row around Cape Cod, the weather forced him to go through the canal instead. His rations for the trip included about 50 sandwiches, bananas, sardines, crackers, ginger ale and a jug of water.

Railroader Writes Book of Poems

"Poet laureate of Long Island" is the title which has been given to Simon Sigmund Tanhauser, a station agent at Springfield Gardens on the Long Island, whose book of poems, "Rhymes of the Sunset Trail," were recently published. Tanhauser has worked at all kinds of jobs on more than 30 railroads in the United States, Canada and Mexico, and knows the life of the cattle ranches, oil fields, fruit orchards and hobo camps. A railroad, to most persons who have worked on it for 20 or 30 years, might seem a prosaic thing. Not so to Tanhauser, for in his "Song of Transportation" he hymns the railroad as planting the seed of commerce, feeding the hungry, clothing the naked and linking states and nations in friendship. Its rails are "webs of steel that bind the hearts and serve the needs of man." Mr. Tanhauser also has found time to make a study of the history and legends of the Long Island Indian tribes. His poems about the Indians lack the robust and cheerful note of his other work. They have in them the tragedy of a vinishing people and are written with great sympathy and poetic feeling.

These Interminable Commuters

When Addison H. Day climbed aboard the 7:24 express train on the Delaware, Lackawanna & Western at Chatham, N. J., on August 1, he nonchalantly began his sixty-first year as a commuter on that railroad between Chatham and New York as a part of the day's work. When he began commuting, the journey was made by stage to the Oranges, where a mail train stopped to take on passengers for New York. The cars were lighted by kerosene lamps and had wood-burning stoves. The engines also burned wood. During that period, Mr. Day, who is comptroller of the Fidelity Trust Company at 120 Broadway, New York, has traveled approximately 863,000 miles going to and returning from work, which stamps him as one of the champion commuters of all time.

Whistling

A most interesting controversy has been raging in the Chicago Tribune on the subject of locomotive whistles disturbing suburban slumbers. That railroads are not entirely friendless is indicated by two of the following letters:

Afflicted With Train Whistle

In this morning's paper was a complaint, made by a resident of Brainerd, of the unnecessary whistling of Rock Island suburban trains passing through Brainerd. But not only is Brainerd cursed with this noise—it has to be endured all through the Beverly Hills district. Is there no way to abolish some of this unnecessary noise?

RESIDENT OF BEVERLY.

Why They Blow

The Rock Island engineers blow their whistles at Brainerd because there are so many insane automobile drivers and jaywalkers who care nothing for their lives and the lives of others. And the laws require that whistles must be sounded at all grade crossings or where lives are in danger.

AN ENGINEER.

The Engineer's Trust

Yellow police cars and red fire engines attract eyes; bells and sirens on these machines attract ears. Public demand requires that these vehicles travel with speed and that they give warnings of their approaches.

In travel, speed and safety are called for, too. Yet some individuals bellow for less noise from trains.

If a train schedule is slow, there is an editorial or a cartoon contrasting the speed of airplanes and automobiles with the snail's pace of the iron horse. Again, if a fast train strikes an automobile and several persons are killed, there is an editorial or a cartoon.

If the person who recommends that the locomotive whistle be relegated to reticence would make some recommendation to curb the automobilists he would be more in order. Deaf, dumb, blind, insane, infant and intoxicated drivers infest our streets.

Who is in the engine cab? A seasoned man runs the locomotive. He has persons on the train in his charge, and he has persons in automobiles to care for. An engineer whom I knew committed suicide after he struck and killed a mother, father and young child.

A RAILROAD NEIGHBOR.

NEWS of the WEEK

The West Shore Yards, Weehawken, N. J.

THE NASHVILLE, CHATTANOOGA & ST. LOUIS has agreed with representatives of its clerks to refer to the United States Board of Mediation the request of the clerks for an increase of ten per cent in their pay.

THE RAILWAY CLUB OF PITTSBURGH will hold its next meeting, which is the annual election of officers, with some entertainment, at the William Penn Hotel, Pittsburgh, on Thursday evening, October 24. Preceding the meeting there will be a dinner.

THE WESTERN RAILWAY CLUB will hold its next meeting at Hotel Sherman, Chicago, on Monday evening, October 21. J. G. Stuart, general storekeeper of the Chicago, Burlington & Quincy, will present a paper on Reclamation of Material.

CORRECTION.—The article, "Is the Purchasing Agent Only a Rubber Stamp," appearing on page 591 of the *Railway Age* of August 3 was inadvertently published without a footnote identifying it as an article entered in the annual essay contest held by the Purchases & Stores division of the American Railway Association.

THE RAILROAD BASEBALL "championship of the world" was won by the Missouri Pacific's Little Rock system championship team at St. Louis, Mo., on October 12, when that team defeated the Pennsylvania's system banner team before 15,000 employees of the roads who came in more than 20 special trains to witness the contest.

THE WESTERN UNION TELEGRAPH COMPANY has made increases in the pay of certain employees, involving an aggregate addition to the payrolls of about $2,000,000 a year. This action does not affect persons receiving more than $3,000 a year nor operators who have been in the service less than two years. This increase follows conferences with representatives of the Association of Western Union Employees.

SENATOR SMITH, of South Carolina, has introduced again in the Senate a bill, S.1853, to provide that the authority of the Interstate Commerce Commission to issue or withhold certificates for the construction of new lines of railroad or extensions shall not extend to the construction of lines located wholly within one state, if the laws of such state require that a certificate be obtained from the state. The bill was favorably reported by the Senate committee on interstate commerce at the last session.

THE UNITED STATES BOARD OF MEDIATION this week decided to take jurisdiction in the controversy involving the Chicago, Milwaukee, St. Paul & Pacific regarding the question whether locomotive engineers shall be represented by the Brotherhood of Locomotive Engineers or the Brotherhood of Locomotive Firemen and Enginemen. The engineers have taken strike votes on six roads in a similar controversy. As the result of a report submitted by O. B. Colquitt, a member of the board who was sent to Chicago recently to investigate the matter, the board decided to accede to the request of the B. of L. E. and mediate in the controversy, although the railroads and the firemen's brotherhood had taken the position that the board had no jurisdiction because the controversy is between two labor organizations. The board assigned Mr. Colquitt to act as mediator.

A. S. M. E. Fiftieth Anniversary

Arrangements for the celebration of the fiftieth anniversary of its founding are now being made by the American Society of Mechanical Engineers at New York. The celebration will take place in April, 1930, and will be pre-eminently an exchange of greetings between nations through the medium of a series of papers on what engineering has done for various countries in a national sense and also for the advancement of world culture and civilization.

Fire Protection Association Meets in Toronto

The sixteenth annual meeting of the Railway Fire Protection Association was held at Toronto, Ont., on October 15, 16 and 17, with 150 representatives of railroads in attendance. Besides the reports of various committees, the program included addresses by Grant Hall, vice-president of the Canadian Pacific; Franklin H. Wentworth, managing director of the National Fire Protection Association; W. D. Robb, vice-president of the Canadian National; E. P. Heatom, fire marshall of the Province of Ontario; J. Grove Smith, fire commissioner for the Dominion of Canada; E. B. Beny, superintendent of insurance of the Southern; and A. R. Small, vice president of the Underwriters Laboratories.

Freight House Facilities

On a certain large railroad, the rails of the track, opposite freight houses, are painted white to facilitate the spotting of cars opposite the doors of the freight house. A white stripe is painted on the outside of the outer rail, exactly long enough to match the width of the door opposite which it is placed, so that a brakeman (on the ground) can use the mark for the accurate stopping of the car. This item of information is given out by the Safety Section, A. R. A., in circular No. 245. The circular also suggests that arrows, painted on the roof of a box car immediately over the centers of the side doors, would be of assistance to brakemen on the top of the car in spotting cars at a freight house door. Brakemen sometimes lean over the edge of the car in order to see the exact position of the car door.

Chicago Car Men Elect Officers

At the annual meeting of the Car Foremen's Association of Chicago, held at the Hotel Morrison, Chicago, October 14, the following were elected officers of the association for the ensuing year: President, F. J. Swanson, district master car builder, Chicago, Milwaukee, St. Paul & Pacific, Minneapolis, Minn.; first vice-president, G. R. Anderson, district master car builder, Chicago & North Western, Chicago; second vice-president, Joseph Grimmer, traveling car inspector, Elgin, Joliet & Eastern, Joliet, Ill. C. J. Nelson, chief interchange inspector of the Chicago Car Interchange Bureau was re-elected treasurer, and G. K. Oliver, passenger car foreman, Chicago & Alton, Chicago, was re-elected secretary. Following the regular business meeting and election of officers, President Swanson addressed the association on the general

subject of "Good Railroading." The meeting was concluded with entertainment features.

Safety Program for November

The Committee on Education, of the Safety Section, American Railway Association, E. R. Cott, chairman, has issued its program for the month of November, prepared for the guidance of railroad safety superintendents and committees. The feature of the program is a large poster printed in two colors which sets forth, in pictorial fashion, some of the principal instrumentalities of railroad safety; the book of rules, the red flag, the blue flag, the red lantern, the locomotive bell, the locomotive whistle, the first aid kit, the shopman's goggles and numerous other things.

The railways are today as safe as inventions and expenditures can make them, says the circular. Appreciable improvement in records can no longer be expected as a result of physical improvements. It is the men that must be improved. The only thing that may be unsafe on the modern railroad is man. "No railroad will be one hundred per cent safe until the employees are

"ALL FOR SAFETY."

It is suggested that Safety Committees review their accomplishments to date and note particularly what a large proportion of accidents will be found due to unsafe practices as compared with those due to unsafe fixtures or conditions.

Historical Sketch of the Michigan Central

The Railway and Locomotive Historical Society (Boston) devotes the whole of its last bulletin, No. 19, to a 25-page article on the Michigan Central Railroad, being notes taken from the annual reports of the company from 1847 to 1876, inclusive. This review, by Charles E. Fisher, president of the Society, is in the nature of an experiment which, if it finds favor, will encourage the author to publish similar articles about the Philadelphia, Wilmington & Baltimore; the Cleveland & Pittsburgh; the Central Railroad & Banking Company of Georgia; and the Philadelphia & Reading.

This review deals with the history of the road from an operating standpoint and is especially detailed in regard to locomotives. Coal burning locomotives were first used about 1862. In 1860, the road built one first-class sleeping car, and three sleeping cars for drovers. In that year, the volume of freight carried was 25 per cent greater than in the preceding year, while yet the train mileage remained the same, an improvement which was credited largely to improved train loading statistics. The financial stringency in 1857 dampened the prosperity of the road, as of most other enterprises of the time. In 1858, this road and the Michigan Southern & Northern Indiana (later a part of the Lake Shore & Michigan Southern) pooled both freight and passenger traffic. The report of 1856 says that at that time all the company's first-class passenger cars had 12 wheels each. The first telegraph line was built in that year and the increase in the capacity of the road (single track) by this improvement was estimated at about 50 per cent.

Wage Increase in Western Canada

Increases in wage rates to the conductors, brakemen, baggagemen, yardmen and switchtenders of the Canadian Pacific and Canadian National (western lines) are recommended in a unanimous finding of the board of conciliation and investigation headed by Judge Dysart of Winnipeg, in Ottawa this week. The members of the board were Isaac Pitblado, K. C., for the companies, and D. Campbell for the men. The increases work out in the neighborhood of 25 cents per hundred miles for passenger conductors and nine cents for freight conductors. Passenger brakemen are recommended for an increase of 7½ cents per hundred miles, with 7 cents for freight brakemen. Yardmen would, under the provisions of the report, receive from 7 to 10 cents a day.

The recommendations of this report would, if accepted by the parties concerned, bring the transportation systems in Western Canada in line with the East where a dispute affecting the C. P. R. and its employees was settled on much the same basis as the foregoing, while certain concessions were granted on the C. N. R. equivalent to these increases.

Trinity Place Station, Boston

The Trinity Place station of the Boston & Albany, at Boston, for westbound passengers (one mile west of the terminal) has been renovated and redecorated, and the platform lengthened, at an expense of $20,000; and passages have been provided to permit passengers to walk directly to or from the adjacent Back Bay station of the New York, New Haven & Hartford, a trip heretofore made via the street. Also, a passage has been provided for passengers walking to or from the Huntington Avenue (eastbound) station of the B. & A., which is a short distance west of Trinity Place. This walk also provides a foot passage between Huntington Avenue station and that of the New Haven.

The principal additional feature of the improvement is a stairway and foot-bridge across the tracks. Inside the station the ticket office in a separate room is done away with, and passengers are served at a counter, similar to the counters to be seen in a number of new stations of the Southern Pacific, though without the raised sections which characterize the latter.

New Rail-Ocean Terminal to be Dedicated at Baltimore

A new rail-ocean terminal for the port of Baltimore, the first unit in the city's $50,000,000 program of harbor improvement, was formally dedicated and turned over to the Western Maryland as lessee on October 19. Constructed by the Port Development Commission of Baltimore for the railroad at a cost of $8,500,000, the new facility, will be known as the McComas Street Ocean Terminal. It will be operated by the Western Maryland as part of the present Port Covington terminals of that railway.

Joint invitations to attend the dedication were issued by Mayor William F. Broening of Baltimore and President Maxwell C. Byers of the Western Maryland to more than 6,000 representative business men and public officials from all parts of the United States and many foreign countries. The program included a luncheon with speeches by Mayor Broening, President Byers, Robert P. Lamont, Secretary of Commerce, and T. V. O'Connor, Chairman of the United States Shipping Board.

The McComas Street Terminal comprises 60 acres of land and water area, and includes a 1,700-ft. pier with depressed and marginal tracks, marginal wharves with two-story transit sheds and

Boston & Albany Station, Trinity Place, Boston

a two-story fire-proof concrete warehouse. The area under roof is 13¾ acres and the floor space totals 920,000 square feet, allowing storage capacity for 120,000 tons of freight. Seven ocean steamers may be docked and worked simultaneously. Electric truck and trailer service has been provided for general cargo transfer, while traveling bridge cranes of ten tons' capacity are installed for handling heavy loads. Connection with other terminal facilities and with the city is afforded by elaborate track and highway systems.

The present terminal is a result of contracts signed between the city and railroad late in 1926, providing for an extendable 30-year lease at a rental sufficient to pay interest and sinking fund charges on the investment. It is the first piece of construction under the Port Development Enabling Act, passed in 1920 by the Maryland legislature, authorizing the city of Baltimore to issue bonds to the amount of $50,000,000 for the building of new pier and harbor facilities.

C. & N. W. Opens New Stock Yards

The Chicago & North Western has opened new stock yards at West Chicago, Ill., to care for eastbound livestock shipments from western and northwestern states. The new stock yards, located 30 miles west of Chicago, represent an investment of $250,000 in land and an equal amount in construction costs. They will replace, as rapidly as possible, the present yards located at LaFox, Ill. and will eliminate the necessity of unloading cattle and hogs for feeding at Clinton, Iowa. The new facilities will speed the arrival of western stock at the Union Stock Yards in Chicago, or the transfer to the belt lines for eastern movement, by almost a day.

The main building of the new unit is a covered receiving shed 620 ft. long and 100 ft. wide. There are 15 loading and unloading pens in this building which are served by 15 chutes. The chutes are so constructed that both decks of a double-decked car can be unloaded or loaded at the same time. A set of 16 open pens and 15 open chutes adjoins the covered structure to the west, and 16 other open loading and unloading pens will be added next year. With this double-decked construction 60 cars can be unloaded in one hour.

Four barns, 400 ft. long and 126 ft. wide, are provided for in the plan, and one is now complete. Sheep will be unloaded either at the open or the covered chutes and be driven through the connecting aisles to the barns. A system of alleys makes it possible to take sheep, hogs, or cattle from any pen in the barns or sheds, and load them through any of the 30 chutes into the cars. One thousand acres of pasture land adjoining the new buildings has been purchased for grazing, and will be ready next spring.

The yards are to be used, in part, as a resting and feeding station, and also as a facility for fattening animals. In order to provide adequately for feeding, the plant is equipped with a 50,000-bu. grain elevator, a 1,000-ton hay storage shed, and a mill for the grinding and mixing of feeds. There is a modern shearing plant whereby 2,000 sheep may be shorn daily.

Railways Study National Standards

An arrangement has been made between the Purchases and Stores Division, A. R. A., and the Division of Simplified Practice of the U. S. Department of Commerce, whereby the standards developed in conferences between buyers and manufacturers, conducted by the Department of Commerce over a period of years, can be obtained by the railroads. The standards, dealing with varied materials, give the sizes, dimensions, and types, which are recommended to promote such uniformity of practice as will enable users to simplify stocks and make purchases to the best advantage. They now include more than 100 commodities. These standards have been summarized by the Department of Commerce on a sheet on which the sizes and dimensions, are tabulated to facilitate reference; and the lists are being sent to all railway purchasing officers. In availing itself of this service, the Purchases and Stores Division is taking action similar to that of other national associations.

The following is a partial list of the simplified practice recommendations that are now available to the railroads:

Reference Number	Name
1	Vitrified paving brick
4	Asphalt
6	Files and rasps
7	Rough, smooth and common brick
13	Structural slate for plumbing and sanitary purposes
14	Roofing slate
16	Lumber
17	Forged tools
20	Steel barrels and drums
22	Paper
26	Steel reinforcing bars
27	Cotton duck
28	Sheet steel
29	Eaves trough and conductor pipe
34	Warehouse forms
35	Steel lockers
37	Commercial forms
39	Dining car chinaware
43	Paint and varnish brushes
45	Grinding wheels
47	Cut tacks and small cut nails
48	Shovels, spades and scoops
50	Bank checks, notes, drafts, etc.
51	Die head chasers
53	Steel reinforcing spirals
57	Wrought-iron and wrought-steel pipe and fittings
58	Iron and steel scrap
60	Packing of bolts
65	Lead pencils
66	Brake linings
67	Roller bearings
71	Turnbuckles
73	One-piece porcelain insulators
76	Ash handles
77	Hickory handles
78	Iron and steel roofing
89	Coated abrasive products
90	Hacksaw blades
95	Skid platforms
100	Welded chain

Financial Reorganization of C. N. R. Planned

At the next session of Parliament Sir Henry Thornton, president and chairman of the Canadian National, hopes to present a scheme for reorganizing the financial structure of that company, according to an address delivered last week in Toronto. It was a stupendous task, he said, to catalogue and appraise the securities of the 92 different companies which went to make up the system, but this had been done, and the next step was to ask Parliament to approve a scheme which would "secure the financial permanence of the property and at the same time enable us to capitalize the financial improvement made in the last few years."

"If the property is to improve in the future as it has in the past," Sir Henry said, "our financial structure must be one which will enable the government to write down the national debt and take advantage of what were formerly liabilities but have now become assets."

By its co-operative scheme under which the employees participate in management, the Canadian National has overcome the difficulties which a state-owned concern usually encounters with labor, Sir Henry said. In every shop, he stated, there was a committee of employees who were of great assistance in aiding greater efficiency. Since the inception of the scheme more than 6,000 suggestions had been received from employees and of these 72 per cent had been adopted and 15 per cent were still under consideration.

The scheme had recently been extended to the maintenance of way employees, and eventually all branches of the service would be involved in the movement. It was, he said, a machine for giving every worker, from the humblest up to the executives, a voice in the control and policy of the system thereby giving him a personal interest in its success and in his own work.

"The Canadian National represents as fine an expression of co-operative effort as can be found in the industrial world. It would be stupid to say the success of the road has been due to the work of any group or any individual. The greatest opportunity is given all our executives to assist in formulating policies and directing operations."

Exhibit of Bridge & Building Materials

Forty-eight firms presented exhibits of materials and equipment employed in the construction and maintenance of bridges, buildings and water stations, under the auspices of the Bridge and Building Supply Men's Association, at the thirty-ninth annual convention of the American Railway Bridge and Building Association, at the Hotel Roosevelt, New Orleans, La., on October 15-17.

The officers of this association during the past year were: President, D. A. Hultgren, Massey Concrete Products Corporation, Chicago; vice-president, W. D. Waugh, Detroit Graphite Company, St. Louis, Mo.; treasurer, B. J. Wilson, Pocket List of Railroad Officials, Chicago; secretary, I. B. Tanner, Joseph E. Nelson & Sons, Chicago. Members of the Executive Committee: W. H. Lawrence, Johns-Manville Corporation, New York; S. A. Baber, High Grade Manufacturing Company, Cleveland, Ohio; J. M. Rutherford, *Railway Age*, Chicago; C. H. McCormick, Ruberoid Company; E. A. Whitmore, The De Vilbiss Company, Toledo, Ohio; B. S. Spaulding, Fairbanks, Morse & Co., Chicago.

The companies exhibiting, with the nature of their exhibits and the names of their representatives follow:

American Hoist and Derrick Company, St. Paul, Minn.; Literature and photographs of locomotive pile drivers, derricks, crawler cranes, locomotive cranes, railroad and locomotive ditchers; B. R. Roquemore, Miss H. M. Hoeller.

American Rolling Mill Company, Middletown, Ohio; Samples and Literature on Ingot Iron; H. M. Arrick, W. W. Graham, E. Harbeck.

American Valve and Meter Co., Cincinnati, Ohio; Model of water column with universal spout, and of stock drencher; John I. Mc Garry, Dan. J. Higgins.

Argyle Railway Supply Company, Chicago; Literature on stoves; A. H. Green.

The Barrett Company, New York City; Walter Buehler, F. N. Nichols.

Carter Bloxonend Flooring Company, Kansas City, Mo.; Flooring, J. G. Galvin.

Celotex Company, Chicago; Celotex products and literature; E. S. Kelly, J. H. Bracken, D. J. Carmouche.

Chicago Bridge & Iron Works, Chicago; Literature and photographs of steel water tanks; H. C. Brown.

James B. Clow and Sons, Chicago; Automatic water closet, two inch cast iron pipe, water main hydrant and lavatory faucets; Walter O'Day, John Madison, H. H. Dawson, W. J. Layman.

Dearborn Chemical Company, Chicago; Samples of chemically compounded rust preventive; C. F. Barham.

Detroit Graphite Company, Detroit, Michigan; Samples of metal protective paints; W. D. Waugh, L. F. Flanagan, A. B. Edge.

The Devilbiss Company, Toledo, Ohio; Paint spray Systems for bridges and buildings; E. G. Whitmore, O. E. Wilcox.

DeWalt Products Corporation, Leola, Pa.; Woodworking machinery, cutting machines, and machines for dapping bridge timbers and ties; L. J. McLaughlin.

Paul Dickinson, Inc., Chicago; Caboose jacks, cast iron chimneys, roof ventilators, deck and roof drains and cast iron exhaust heads; A. J. Filkins, A. E. Engman.

Joseph Dixon Crucible Company, Jersey City, N. J.; Literature and samples of graphite paint and lubricants; E. M. Brooks.

Duff-Norton Manufacturing Company, Pittsburgh, Pa.; High speed screw jacks, standard speed screw jacks, rachet and geared rachet jacks and journal jacks; Albert Roberts, Earl Thulin.

C. A. Duham, Co., Chicago; Literature on heating system and specialties; C. F. Roscoe, L. W. Millar.

Fairbanks, Morse and Company, Chicago; F. M. Condit, C. H. Wilson, C. B. O'Neil, H. J. Smith, E. C. Golladay, L. H. Mathews.

Fairmont Railway Motors, Inc., Fairmont, Minn., Bridge and building gang motor cars and motor car headlights and windshields; Kenneth K. Cavins, Ward G. Day, K. M. Simpson.

Federal Engineering Company, Chicago; W. H. Nelson.

Hastings Signal and Equipment Company, Boston, Mass.; Tell-tale hanger and side clearance warning device; R. W. Hastings, Harry H. Navor.

High Grade Manufacturing Company, Cleveland, Ohio; Literature and samples of fibre cement; S. A. Baber, J. N. Kinn.

Ingersoll Rand Company, New York City; Literature on compressed air equipment for bridge and building work; W. H. Armstrong, G. W. Morrow, W. H. Lee.

Ingot Iron Railway Products Company, Middletown, Ohio; Model demonstrating the method of jacking culverts through embankments and section of perforated pipe and section of paved pipe; N. A. Powell, T. Scott, R. Y. Barham.

The Insulite Company, Minneapolis, Minn.; Samples of wood fibre insulation board and a model showing its application in building construction; R. J. Wilde, R. M. Jordan.

Johns-Manville Corporation, New York City; Roofing materials, pipe and boiler insulation, waterproofing, industrial flooring and smoke jacks; W. H. Lawrence, A. C. Pickett, D. B. Bell.

Jones Paint Company, Rome, N. Y.; Liquid and plastic roofing cement; A. de Wolfe Jones.

The Kaustine Company, Inc., Perry, N. Y.; Literature and models of chemical toilets and septic closets; Charles F. Smale, David A. Evans.

The Lehon Company, Chicago; Samples of asphalt roll roofing, asphalt built-up roofing, membrane shingles, waterproofing and roof coatings, and asphalt emulsion; Tom Lehon, J. W. Shoop.

Lewis Asphalt Engineering Corporation, New York City

Massey Concrete Products Company, Chicago; Literature on reinforced concrete culvert pipe cribbing and piling, also photographs; David A. Hultgren, C. H. Hunsacker, J. A. Higgs, Jr.; W. L. McDaniel.

Murdock Manufacturing and Supply Company, Cincinnati, Ohio; Hydrants, railway water service boxes, wall fountains and air valves; J. C. Endebrock, J. C. Endebrock, Jr.

Joseph E. Nelson and Sons Company, Chicago; I. B. Tanner.

National Lead Company, New York City; Literature on red and white lead; F. E. Dodge, W. S. Carlisle, L. L. Hopper.

Northwestern Motor Company, EauClaire, Wis.; Heavy duty motor car; W. J. Church.

W. W. Patterson Co., Pittsburgh, Pa.; Hand made steel tackle blocks for wire cable and hand made wood tackle blocks for manila rope; W. W. Patterson, Jr.

The Patterson Sargent Company, Cleveland, Ohio; L. J. McComb.

Pittsburgh-Des Moines Steel Company, Pittsburgh, Pa.; Photographs and literature on steel water tanks and treating plants; O. D. De Hart, W. R. Workman.

Pittsburgh Plate Glass Company, (Paint and Varnish Division), Pittsburgh, Pa.; Paints; W. T. Carey, P. B. Truslow.

Pocket List of Railroad Officials, New York City; Copies of Pocket List of Railroad Officials; B. J. Wilson.

Railway Engineering and Maintenance, Chicago, Ill.; Copies of *Railway Age* and Railway Engineering and Maintenance; Elmer T. Howson, J. M. Rutherford, J. G. Little.

The Geo. J. Roberts Co., Dayton, Ohio; Literature on railroad water treating plants; John C. Jamieson.

H. H. Robertson Company, Pittsburgh, Pa.; Samples of protected metal roofing, and siding, ventilators, skylights, sash and V-beam sheets; H. D. Sheets, E. H. Wasmuth, R. B. Archer, J. R. Nichols.

Wm. Robertson and Company, Chicago; Wm. R. Robertson.

Sherwin Williams Company, Cleveland, Ohio; H. S. Donnely, Arthur Larkins.

U. S. Wind Engine and Pump Company, Batavia, Ill.; Literature on tanks, steel towers, water columns and tank fixtures; also models; C. E. Ward.

Wolverine Porcelain Enameling Co., Detroit, Mich.; Porcelain enameled roof tile; Frank C. Kingsland.

Zitterell Mills Co., Webster City, Iowa; G. C. Mills.

Traffic

The Chesapeake & Ohio, the Hocking Valley and the Pere Marquette have opened a joint freight traffic office at Seattle, Wash., with E. D. Lamiman, formerly commercial agent of the Pere Marquette, in charge as district agent.

The rationing of cars for grain shipments from Canadian prairie points to the head of the Great Lakes, placed in effect by the Canadian National and the Canadian Pacific on October 1, was canceled on October 14.

The Government of Nova Scotia, speaking through a Bureau of the Department of Highways, estimates that tourist traffic in that province, which in 1928 was worth to Nova Scotians $14,000,000, has this year been 25 per cent greater than it was in 1928.

At a meeting of the Toledo Passenger Club on October 9, the following officers were elected: President, T. J. Hays, division passenger agent, of the Cleveland, Cincinnati, Chicago & St. Louis; vice-president, A. K. Spinney, superintendent of the Pullman Company; secretary, L. A. Brown of the New York Central ticket office; and treasurer, C. M. Hart, assistant ticket agent of the Union Station.

The Interstate Commerce Commission has ordered a discontinuance of an investigation concerning the lawfulness of the freight classification of airplanes and airplane parts in Official, Southern and Western classifications, which it had ordered on May 23 following the filing of new classification ratings by the railroads. The carriers on September 15 cancelled the proposed ratings, which had been suspended pending investigation.

The West Jersey & Seashore (Pennsylvania) in its new timetable, provided for passenger train service on the main line of the Atlantic City division which was complained of as insufficient; and, following conferences with representatives of the complaining communities, the railroad, on September 30, put on three trains to be operated temporarily with a view to determining what patronage they would receive; and the Public Utility Commissioners of New Jersey after 30 days, will consider the question whether the road is justified in its proposed limitation of service.

Reports of the meeting of the Great Lakes Regional Advisory Board at Buffalo, show probable total car requirements of shippers of this region as about 1.6 per cent less in the last quarter of this year as compared with the last quarter of 1928. That this recession will not apply to the major manufacturing operations of this district is shown in the requirements of the iron and steel industries in which an increase of 3.6 per cent is expected; and of automobiles, where the expected increase is 4.2 per cent. Largest decreases are shown for sand, gravel and stone of 5.1 per cent, and ore 5.4 per cent.

The Mississippi Valley Barge Line Company, which numbers among its stockholders various officials of the International Shoe Company and the Columbia Terminals Company, St. Louis, Mo., has filed with the Interstate Commerce Commission an application for a certificate of public convenience and necessity for the operation of a bi-weekly common carrier freight service by boat and barge from and to Cincinnati, Ohio, and other points, and New Orleans, La., and other points, on the Ohio and Mississippi rivers, and also between intermediate points and points on railroad lines serving the river ports. It is stated that the applicant has a fully-paid capital of $3,000,000 and that it has let contracts for the construction of five tow-boats and 50 barges which will give it a capacity for 1,500 tons of freight each trip, or 3,000 tons weekly. L. W. Childress, president of the Columbia Terminals Company, St. Louis, is named as president of the company.

Crescent Limited to Have Light Green Cars

"The Crescent Limited" through trains between New York and New Orleans over the Pennsylvania, the Southern, the Atlanta & West Point and the Louisville & Nashville, are to have new Pullman cars throughout and one of the new trains (nine cars) was placed on exhibition at Broad Street Station, Philadelphia, on

October 11. The same cars were later placed in the Union Station, Washington, for the inspection of the public; and a similar train will be on exhibition at the Pennsylvania Station, New York City, on October 21. All these new cars are painted light green.

Freight Claims Again Decrease

Freight claim payments by Class I carriers for the first six months of 1929 show a decrease of $324,859 or from $18,834,897 in the first half of 1928 to $18,510,038 in the same period in 1929, according to figures compiled by the Freight Claim Division of the American Railway Association. The outstanding decrease among the causes for loss and damage, is under the head of defective or unfit equipment, $155,663. Loss of other than entire packages likewise showed a decrease, the amount being $147,029, while delay was eliminated to the extent of $123,309. But rough handling of cars resulted in increased payments to the amount of $407,530.

A further allocation shows that claims on l. c. l. shipments were reduced $300,581 and those on carload freight $24,278. Among the carload commodities, coal and coke claims showed a reduction of $149,362 and eggs in shell, $85,268. Claim payments on fresh fruits, melons and vegetables increased $267,691; on automobiles, trucks and accessories, $162,269; and on iron, steel and other metal articles, $72,276. Less than carload commodities, claims on which decreased, were: Machinery and boilers, $134,020; dry goods, clothing and textiles, $105,443; and tobacco products, $68,748.

I. C. C. to Investigate Extra Fares

The Interstate Commerce Commission on October 15 announced the institution of an investigation "with respect to charging by railroads of extra fares on passenger trains in addition to the regular passenger and Pullman fares and surcharges," by making public an order it had adopted at a general session on September 28. All common carriers by railroad subject to the interstate commerce act are made respondents and the proceeding is assigned for hearing at such times and places as the commission may hereafter direct. Fourth Section applications Nos. 13,871, 13,920, 13,924 and 13,928, which had been filed by eastern roads earlier in the year, and which had been assigned for hearing on October 15, were consolidated with the more general investigation and the hearing on them was postponed.

The subject of extra fares has been under discussion for several months between representatives of the railroads and the commission, who had brought up the matter by taking the position that the extra fares contravene that part of the fourth section of the act which prohibits through rates in excess of the aggregate of intermediates, except as authorized by the commission. This position was taken because the extra fares are not applied at all intermediate points and it is possible in some instances to defeat the through fare by purchasing two local tickets. The railroads then filed application for fourth section relief but the discussion led to a determination on the part of the commission to investigate the entire question of the propriety of the extra fares.

Superfluous Flag Stations

The Pennsylvania has petitioned the Public Service Commission of New York for authority to discontinue 20 non-agency freight and passenger stations; and has applied to the Public Utility Commissioners of New Jersey for similar authority in relation to 18 non-agency stations in that state. The news item about the New York stations speaks of non-agency stations, freight and non-agency stations, non-agency passenger stations, and non-agency passenger and freight stations. The commission announces that it will fix a date for hearing on these petitions.

The New Jersey applications refer to six stations on the Medford branch; three on the Pennsgrove branch; three on the main line between Camden and Atlantic City; one on the Bridgeton branch; two on the Camden Terminal Division and three on the Salem branch. The petitions of the railroad are approved as to Coopers, Liberty Park, Murphy, Ivyside, Beideman and Ogden. The petitions are denied as to Rulon Road, Morris, Jumbo and Greens. In the case of Harding, the board grants permission to discontinue the passenger station but, as to freight facilities, the petition as to abandonment is denied.

Freight Traffic In August

Freight traffic handled by Class I railroads for the first eight months in 1929 totaled 325,388,114,000 net ton-miles, an increase of 11,030,634,000 net ton-miles, or 3.5 per cent over the previous high record for any corresponding period, established in the eight months of 1927. It also was an increase of 19,821,320,000 net ton-miles or 6.5 per cent above the eight months of 1928, according to reports compiled by the Bureau of Railway Economics.

Railroads in the Eastern district for the eight months reported an increase of 8.4 per cent, compared with the same period in 1928, while the Southern district reported an increase of 1.3 per cent. The Western district reported an increase of 5.8 per cent.

Freight traffic in August amounted to 44,943,996,000 net ton-miles, an increase of 2,519,499,000 net ton-miles or 5.9 per cent, over the same month last year. It also was an increase of 2,959,804,000 net ton-miles or 7 per cent above that for August, 1927.

In the Eastern district, there was an increase in the volume of freight handled of 7.5 per cent in August, 1929, compared with the same month in 1928, while the Southern district reported an increase of 2.4 per cent. The Western district reported an increase of 5.1 per cent.

The average speed of freight trains in August was 13.1 miles per hour, the highest average for any August on record, and an increase of four-tenths of one mile above that for August last year.

The daily average movement per freight car in August was 33.5 miles, also the highest for any August on record, exceeding the same month last year by 1.4 miles, and the same month in 1927 by 2.6 miles.

The average load per car in August this year was 27.5 tons, including less than carload freight as well as carload freight. This was an increase of three-tenths of a ton above that for August, 1928, but a reduction of one-tenth of a ton under August, 1927.

Grain Rates to Gulf Reduced

Although the emergency reductions in export rates on wheat and wheat flour put into effect by the railroads in May at the request of President Hoover expired by limitation on September 30, rates by the southwestern lines on wheat, corn and their products to Texas and Louisiana Gulf ports for export have now been placed on a lower basis than those formerly in effect. This follows independent action by the Kansas City Southern which the other roads have now been allowed by the Interstate Commerce Commission to meet. Following a 7-cent reduction from the former rate, made effective by the Kansas City Southern in September, from Kansas City, corresponding reductions were made effective on October 10 and later dates, from Omaha and other markets and country shipping points by the other roads. They had previously been allowed by the commission to reduce the rate from Kansas City on short notice but the rates from other competitive points were not reduced until the tariffs became effective on the usual 30 days' notice.

Many requests for a suspension of the rates were made to the commission, but on October 4 it decided to let the tariffs become effective. Meanwhile it has the entire western rate situation under consideration in connection with its investigation under the Hoch-Smith resolution, in which the commission examiners have proposed mileage scales of rates for grain and grain products.

The new export rates from some of the principal markets and country shipping points to Galveston and New Orleans, effective October 10, are as follows: The so-called proportional, or reshipping rate, from Omaha, Nebraska City and Council Bluffs, is 24½ cents; from Atchison and Leavenworth, Kan., and St. Joseph, Mo., 23½ cents. The local export rate from Wichita, Kan., is 37 cents and from McPherson, Kan., 38 cents. A corresponding reduction of 7 cents per 100 lb. from Des Moines, Ia., and certain other points became effective on October 12, making the new proportional or re-shipping rate on wheat 24½ cents and on corn 23 cents. The new proportional rate from St. Louis to New Orleans, effective on October 15, is 11 cents, with a minimum combination rate of 18½ cents. When all the tariffs become effective reductions will apply generally throughout southwestern territory.

The new export rate on wheat from

Kansas City to Galveston and New Orleans is 23½ cents per 100 lb., whereas the old rate was 30½ cents and the lower emergency rate, which has just expired, was 19 cents.

The Kansas City Southern, in asking the commission to suspend the tariffs by its competitors, alleged that it had made its reduction to establish a proper equalization, and that the reductions proposed by the other roads from other points, particularly in Kansas, Nebraska and Colorado, were uncalled for and would do no good, in view of the conditions at the ports. Many protests and requests for suspension, as well as requests that the rates be allowed to go into effect, were filed with the commission by various boards of trade and grain exchanges variously interested in the proposals, and representatives of various eastern roads also protested certain of the proposed rates on the ground that they would tend to disrupt the grain rate structure throughout the major portion of the United States. The Chicago Board of Trade, asking for a suspension, said it had been informed that the eastern roads considered the rates too low for them to meet.

Low Rates on Canadian All-Rail Grain Approved

Appeal of the Canadian National and Canadian Pacific Railways from the order of the Board of Railway Commissioners reducing carrying rates on grain from Port Arthur-Fort William to Quebec City, has been dismissed in a judgment handed down by Mr. Justice Lamont of the Supreme Court of Canada. The application was heard by him in chambers recently.

In his judgment Mr. Justice Lamont wrote: "Has it been made to appear on this application that it is fairly arguable that the rates fixed by order number 448 are unfair or unreasonable? I am very clearly of the opinion that it has not. Not only have the railways failed to show that the Board misdirected itself, but their own conduct since the order was made, has been such as to justify the inference that, in their judgment, the rates are not unfair or unreasonable."

His Lordship expressed the further opinion in his judgment "that the action of the railways in obtaining from the Railway Board extensions of time covering a period of nearly two years within which to make application for leave to appeal, and their application for such leave only when a reduction of the rates fixed by order number 448 was threatened, and when application had been made to obtain rates to Maritime ports based on those rates, points strongly to the conclusion that the railways had no bona fide intention of appealing against the order or any rates fixed therein."

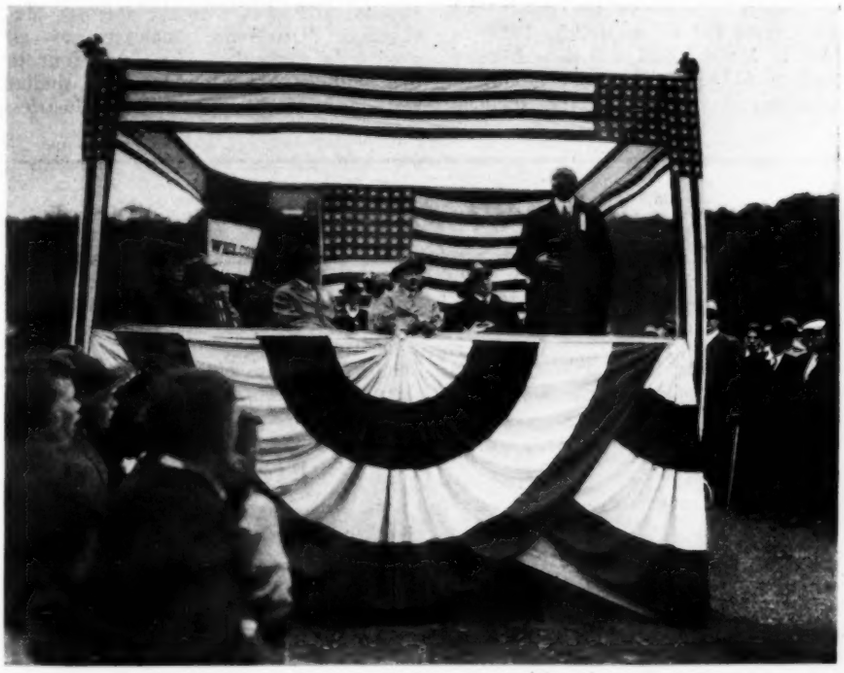
The decision of Mr. Justice Lamont now leaves the way open for the Board of Railway Commissioners to deliver ruling on the matter of grain rates affecting both Quebec and the Maritime Provinces, since their right to do so has now been sustained.

The judgment of Mr. Justice Lamont in the Supreme Court affirming the jurisdiction of the Board of Railway Commissioners in the settlement of grain rates on the Trancontinental Railway, does not mean that the reductions proposed in the spring of three cents per cwt. from the head of the Lakes to Quebec, will automatically be enforced. It does, however, make clear that the Board of Railway Commissioners is the competent body to decide what action should be taken. It is recalled here that, when the reduction of three cents per cwt. in grain rates became effective in the spring on the American railways. Sir Henry Thornton, president of the Canadian National, declared that should such a reduction affect Canada, steps would be taken to protect Canadian interests, and a similar drop was put into effect on grain hauled eastbound to Montreal. The tangle arose when the request was urged by the Harbor Commissioners of Quebec for applicaion of this reduction to that port over the National Transcontinental line of the C. N. R.

Linked up with this question is a former ruling by the Board of Railway Commissioners, who in 1927 established in a rate from the head of the lakes to Quebec of 18.34 cents. The rate to Halifax and St. John was 34 cents, and it was the vigorous protest of those two cities which, in great measure, precipitated the present situation. The Atlantic ports base their claim on the conditions prerequisite to the construction of the Transcontinental Railway. One of these was that, on completion by the government of this road and its lease to the Grand Trunk, a rate should be established which would put the Canadian Atlantic ports on a parity, for all practical purposes, with United States ports. The Grand Trunk did not take up the lease, and eventually the Transcontinental became merged in the Canadian National. The Maritimes, however, take the stand that this consolidation did not affect the terms on which the railway was originally constructed. They assert that the money spent by the government in building the road was money supplied by the people of Canada on the pledge that the policy of lower grain charges would be carried into effect. This obligation was formulated in an act of Parliament in 1903, covering the terms of the proposed lease to the Grand Trunk.

By agreements between the railway administrations of Hungary, Czechoslovakia and Poland special through export and import rates are to be established between Hungarian points and the ports of Danzig and Gdynia, according to advices from the American vice consul at Danzig. Among the commodities to be covered by the new rates are wine, iron manufactures, onions, grain, canned fruits and vegetables, agricultural machinery, flax, hemp, ores, pyrites, wool and cotton.

* * * *



Scene at the Dedication of the Monument Erected to Commemorate the Centennial of the Portage Railroad

Governor John S. Fisher, of Pennsylvania, speaking at the dedication, on October 1, of a monument which the state erected near Cresson to mark the one hundredth anniversary of the building of the Portage Railroad, the predecessor of the Pennsylvania, as described in the *Railway Age* of October 5. Seated immediately behind Governor Fisher are, from left to right: William Elmer, Special Engineer, Pennsylvania Railroad, A. J. County, Vice-President in charge of Finance and Corporate Relations, Pennsylvania Railroad, and Charles M. Schwab.

Foreign Railways

British Railway Receipts Show Increase of £193,000

According to recent reports of the Department of Commerce, revenues of the four British railway companies showed an increase of £193,000 (about $940,000) for the first 34 weeks of 1929 as compared with the same period in 1928. Most of the improvement is due to the very favorable showing of the last two months, as gross revenues for the first half of the current year were £330,000 less than those for the corresponding six months of 1928. The increase over the 34-week period, however, is almost entirely the result of heavier movement of coal, coke and similar commodities. Revenues from these sources were £2,052,000 higher in 1929 than in 1928, while passenger receipts fell off £1,835,000, and those from merchandise shipments dropped £25,000.

British Railways Decrease Number of Employees

A decrease of 35,011 in the total number of employees on British railways between March 1, 1928, and March 1, 1929, is the most striking fact revealed by the annual report on employees and wages, which has just been published by the Ministry of Transport. This report, containing official railway employment statistics for Great Britain, refers to March 1, and shows that the total number of British railway workers fell slowly but steadily from 702,062 in March, 1925, to 677,148 in March, 1928, and then dropped sharply to 642,137 in the same month of the current year. This is the smallest force with which the British railways have been operated since the war.

The 642,137 employees as of March 1 of the current year were divided among the various systems as follows: London, Midland & Scottish, 235,490; London & North Eastern, 183,858; Great Western, 103,007; and Southern, 68,851.

Average weekly earnings of employees for the year ended March 1, 1929 were 89s. 7d., or $21.50, for the clerical and supervisory forces; 66s. 5d., or $15.94, for operating department employees; and 69s. 1d., or $16.58, in the mechanical and engineering departments. Except in the operating department, where increases granted for length of service have tended to maintain wages at the 1928 level, these averages are slightly under those for March 1, 1928. The reduction is due to the wage cut of two and one-half per cent which the employees accepted voluntarily in August, 1928, to help the railroad managements out of financial difficulties, and which the unions are now seeking to have abolished.

Compared with pre-war years, however, even the 1929 wages represent an increase of approximately 140 per cent in the earnings of railway workers, while these same wages compare favorably with those now being paid in other industries. In general, railway employees in London are paid less than workers of similar grades in other industries, while railway employees elsewhere in Great Britain earn more than the average. Mechanical department employees of all grades, in particular, earn from four to five shillings a week more than similar workers in outside engineering industries.

Equipment and Supplies

Locomotives

THE CHICAGO, BURLINGTON & QUINCY is now inquiring for 12 of the 4-6-4 type locomotives and eight of the 4-8-4 type locomotives.

THE SEABOARD AIR LINE is inquiring for four 2-8-2 type, six 2-10-0 type and five six-wheel switching locomotives.

FORD MOTOR COMPANY, Dearborn, Mich., has ordered for its River Rouge plant, one 600 hp. and one 300 hp. oil-electric locomotive from the Ingersoll-Rand Company. These locomotives will be furnished with General Electric equipment and will be built at its Erie works.

THE GREAT NORTHERN'S 1930 equipment building program includes the construction of 1,000 box cars at its St. Cloud, Minn. shops, 300 ore cars at its Superior, Wis. shops, (reported in the *Railway Age* of September 21), 24 freight locomotives at its Great Falls, Mont. and Hillyard shops and six mallet type locomotives at its Hillyard shops, (reported in the *Railway Age* of September 21). In addition, 1,000 gondola cars will be constructed outside of its own shops.

Freight Cars

THE CHICAGO & NORTH WESTERN is inquiring for 100 underframes for caboose cars.

THE ANGLO-CHILEAN CONSOLIDATED NITRATE CORPORATION is inquiring for 50 dump cars of 16 cu. yd. capacity.

THE NORTH AMERICAN CAR CORPORATION is inquiring for 1500 steel underframe double-sheathed refrigerator cars of 40 tons' capacity and 40 ft. long.

THE CERRO DE PASCO COPPER CORPORATION has ordered 20 gable bottom cars of 50 tons' capacity from the American Car & Foundry Company.

THE UNITED STATES NAVY DEPARTMENT has ordered one steel underframe flat car of 50 tons' capacity and 40 ft. long from the American Car & Foundry Company.

THE PENNSYLVANIA SALT MANUFACTURING COMPANY, Philadelphia, Pa., has ordered from the General American Tank Car Corporation four tank cars of 4,000 gal. capacity.

THE IMPERIAL REFINING COMPANY, LTD., is inquiring for 50 insulated tank cars of 50 tons' and 10,000 gal. capacity, 40 tank cars of 50 tons' and 10,000 gal. capacity, and 75 tanks cars of 40 tons' and 6,500 gal. capacity.

THE ST. LOUIS-SAN FRANCISCO is inquiring for 2500 steel frame, single sheathed box cars of 50 tons' capacity and 40 ft. long, 500 steel frame, single sheathed automobile box cars of 50 tons' capacity and 40 ft. long, and 800 steel frame gondola cars of 50 tons' capacity and 41 ft. long.

THE PENNSYLVANIA has ordered 1,000 Class X—29 steel box car bodies for general service from the Bethlehem Steel Company at a cost of about $1,525,000.

THE SOUTHERN orders for 1500 hopper cars, placed with the Pressed Steel Car Company, and 3500 box cars, placed with the American Car & Foundry Company, reported in the *Railway Age* of October 12, are for service as follows:

No.	Type	Road
1500	Hopper	Southern
1000	Box	Southern
1000	Box	Cincinnati, New Orleans & Texas Pacific
500	Box	Alabama Great Southern
500	Box	New Orleans & North Eastern
500	Box	New Orleans Terminal

THE ATCHISON, TOPEKA & SANTA FE has placed orders for 5754 freight cars as follows:

No.	Type	Builder
1500	Box	Pullman Car & Manufacturing Corp.
1000	Box	General American Car Company
500	Box	Pressed Steel Car Company
500	Box	American Car & Foundry Company
500	Refrigerator	Pullman Car & Manufacturing Corp.
300	Stock	Pennsylvania Car Company
200	Ballast	Rodger Ballast Car Company
104	Caboose	American Car & Foundry Company
150	Flat	American Car & Foundry Company
300	Gen. Ser. Gondola	American Car & Foundry Company
500	Automobile	Pressed Steel Car Company
200	Mill Gondola	Standard Steel Car Company

Inquiry for this equipment was reported in the *Railway Age* of September 21.

Passenger Cars

THE FERNWOOD, COLUMBIA & GULF has ordered one passenger gasoline rail motor car from the J. G. Brill Company.

THE ST. LOUIS-SAN FRANCISCO is inquiring for 10 steel baggage cars 70 ft.

long and five steel baggage and mail cars 70 ft. long, with 30-ft. mail compartment.

THE DENVER & RIO GRANDE WESTERN has ordered two combination mail and baggage cars from the American Car & Foundry Company. Inquiry for this equipment was reported in the *Railway Age* of September 21.

THE ATCHISON, TOPEKA & SANTA FE has placed orders for the following equipment:

No.	Type	Builder
10	Coaches	Pullman Car & Manufacturing Corporation
10	Smoking Cars	
5	Dining Cars	
2	Cafe Observation Cars	
19	Mail and Baggage Cars	
3	Mail and Smoking Cars	
2	Gas-Electric Cars	

Iron and Steel

THE LOUISVILLE & NASHVILLE has ordered 59,900 tons of 100-lb rail from the Tennessee Coal Iron & Railroad Company.

Pennsylvania Places $20,000,000 Rail Order

The Pennsylvania has placed orders for 310,000 tons of steel rails for use in 1930 with the following companies: Carnegie Steel Company and Illinois Steel Company jointly, 155,000 tons; Bethlehem Steel Company, 136,400 tons; Inland Steel Company, 18,600 tons. These are the largest orders for steel rails ever placed in any one unit by the Pennsylvania. They represent aggregate expenditures including the cost of fastenings and other accessories of approximately $20,000,000.

New York Central Orders 206,430 Tons of Rail

The New York Central has placed orders for 206,430 tons of open hearth Dudley section steel rail for delivery during 1930 at a cost of about $9,000,000. Of this tonnage seventy per cent has been ordered for immediate specification and the balance taken under option for future specification. The rail has been ordered from the following companies: Bethlehem Steel Company, 87,040 tons; Illinois Steel Company, 76,200 tons; Inland Steel Company, 16,930 tons; Carnegie Steel Company, 13,860 tons; Dominion Iron & Steel Company, 12,400 tons.

Signaling

THE READING has contracted with the Union Switch & Signal Company for the installation of a complete new interlocking plant, type F, electric, at Wayne Junction, Philadelphia; 67 levers. Color-light signals will be used.

THE MISSOURI PACIFIC has contracted with the General Railway Signal Company for the installation of automatic block signals on the Houston Belt & Terminal Railroad, between Houston, Tex., and Percival Junction, four miles. Color-light signals will be used.

Supply Trade

H. B. Wilson & Co., St. Louis, Mo. have been appointed sales representatives for the **Cleveland Crane & Engineering Company,** Cleveland, Ohio.

C. H. MacDonald, director of sales and head of the market research department of the **Colorado Fuel & Iron Company,** Denver, Colo., has been elected vice-president in charge of sales in California.

The Gardner-Denver Company has moved its New York branch office from 30 Church street to larger quarters at 147 Varick street New York City. The new quarters afford space for both office and warehousing purposes.

D. S. Mair of the D. S. Mair Machinery Company, Houston, Texas and **Charles J. Harter,** railroad representative of Joseph T. Ryerson & Son, Inc., have formed the **D. S. Mair Machinery Corporation.** Mr. Harter will have charge of the Dallas office at 4521 Edmondson avenue, Dallas, Texas. The new corporation will represent Joseph T. Ryerson & Son, Inc. in its machinery sales only, for both commercial and railroad accounts, in the states of Texas, Louisiana and the southern part of Arkansas. It will likewise continue to handle the accounts of the Whiting Corporation, Harvey, Ill.; and the Landis Machine Company, Waynesboro, Pa.

James H. Watters, who has been elected president and general manager of the **Marion Steam Shovel Company,** was born on January 30, 1885 at Norfolk, Va. and was educated at the University of Virginia. He entered business on December 1, 1904 as a member of the wholesale hardware firm, Watters & Martin, Inc., with which he was associated until December 31, 1925. On January 1, 1926, he entered the employ of the New York Air Brake Company, New York, as vice-president and manager of sales, which position he held until his recent election.

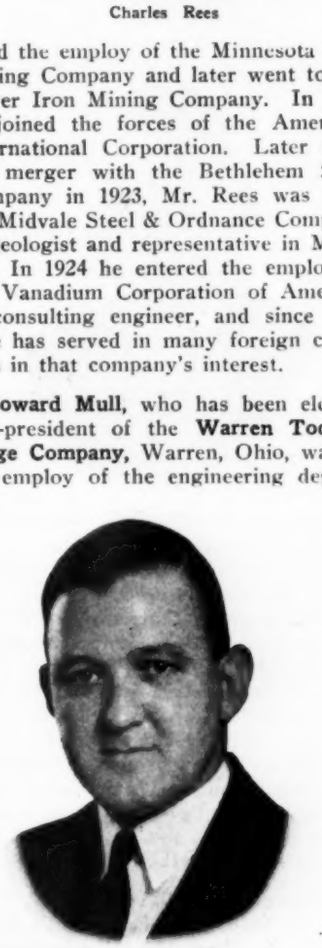
M. E. Danford, works manager of the Middletown (Ohio) division of the **American Rolling Mill Company** has been appointed assistant vice-president. Mr. Danford started work with ARMCO in February 1910, as superintendent of the open hearth department of the Central works plant. In July, 1911, he was appointed assistant to Charles R. Hook, then general superintendent of the American Rolling Mill Company. In July, 1916, Mr. Danford was appointed general superintendent of the Middletown division and since 1921 served as works manager of that division.

Charles Rees, consulting engineer of the **Vanadium Corporation of America,** New York, has been appointed vice-president in charge of mining operations. Mr. Rees is a geologist and mining engineer with considerable experience throughout the world. He received his geological training at the University of Wisconsin and since the completion of his college work he has been engaged in mining activities. In 1900 Mr. Rees en-

Charles Rees

tered the employ of the Minnesota Iron Mining Company and later went to the Oliver Iron Mining Company. In 1916 he joined the forces of the American International Corporation. Later until the merger with the Bethlehem Steel Company in 1923, Mr. Rees was with the Midvale Steel & Ordnance Company as geologist and representative in Mexico. In 1924 he entered the employ of the Vanadium Corporation of America, as consulting engineer, and since that time has served in many foreign countries in that company's interest.

Howard Mull, who has been elected vice-president of the **Warren Tool & Forge Company,** Warren, Ohio, was in the employ of the engineering depart-



Howard Mull

ment of the Cleveland, Cincinnati, Chicago & St. Louis from 1909 to November, 1913, at which time he was transferred to the operating department at Cleveland. On May 1, 1913 he left the employ of the Big Four to become associated with the Verona Tool Works and in December, 1913, was made traveling representative, which position he held until June, 1918, when he was

placed in complete charge of sales. He held this position until December 31, 1920, when he resigned to enter the employ of the Warren Tool & Forge Company as manager of the railroad department which position he has held until his recent promotion.

D. H. Corlette, who has been in charge of investigation and research for the **Wood Conversion Company,** Cloquet, Minn., has been promoted to manager of railroad and industrial sales, a newly created position, and will be in charge of all sales to railroads, aircraft and motor coach manufacturers, government departments and industrial concerns. Mr. Corlette's headquarters are in Chicago where he will direct the sales of the present New York, Detroit and Washington offices and of additional branches to be established later. He graduated from Iowa State College in 1914, entering business as an estimator with a contracting firm. After three years as estimator and construction superintendent, he began selling pre-fab-

D. H. Corlette

ricated buildings, later becoming sales manager of the concern. In 1921 he joined the sales force of the Minnesota & Ontario Paper Company and in 1924, shortly after the Weyerhaeuser interests established the Wood Conversion Company to manufacture and market insulating materials, he was engaged to investigate and develop new markets and possibilities of new products, particularly among railroads and manufacturers.

Obituary

Stephen Balkwill, president of the Balkwill Manganese Crossing Company, Cleveland, Ohio, died of pneumonia in that city on October 10.

Frank Henderson, manager of the Cleveland office of the Combustion Engineering Corporation, New York, died on September 25. He was born at **Tuscola, Ill.,** on February 11, 1876, and joined the Green Engineering Company in 1898. After 1922, when the Green Engineering Company was absorbed by the Combustion Engineering Corporation, Mr. Henderson served as district manager for the Combustion Engineering Corporation.

Ernest F. Harder, assistant to the vice-president of the Westinghouse Electric & Manufacturing Company, and for over 40 years identified with the electrical manufacturing industry, died at his home in East Orange, N. J., on October 13. Mr. Harder was born at Rostock, Germany, on August 15, 1858. He came

Ernest F. Harder

to the United States when he was 25 years old and served as a foreman at the Garrison Alloy works of the Westinghouse Company at Pittsburgh, Pa. At that time George Westinghouse was just beginning his work with alternating current electricity, and Mr. Harder was one of the first employees of the Westinghouse Electric & Manufacturing Company. He remained with this organization until his death. In 1893, he went to the Newark works as foreman; in 1895 he returned to East Pittsburgh as general foreman and four years later was appointed assistant superintendent. In 1904, he was transferred to the Newark works at which time he was made superintendent, becoming works manager in 1918, and assistant to vice-president in 1926. He was identified for a period of 41 years with the development of many Westinghouse apparatus. Under his supervision many early types of electrical instruments such as meters, switches, etc., were developed and manufactured.

* * *

On the Southern Pacific at Los Angeles

Construction

ATCHISON, TOPEKA & SANTA FE.—Three related applications have been filed by subsidiaries with the Interstate Commerce Commission proposing a comprehensive plan for the construction of approximately 380 miles of new line in Texas, Oklahoma, New Mexico and Colorado which, it is stated, will afford a shorter line between Colorado and the Gulf of Mexico, a shorter line between Los Angeles and Chicago, and serve local agricultural territory and an oil and gas field in the Panhandle of Texas heretofore without transportation facilities. The Dodge City & Cimarron Valley applied for a certificate authorizing the construction of a line from the south line of Baca county, Colo., to Las Animas, Colo., 83 miles; the Panhandle & Santa Fe asked authority for a line from Amarillo to a point on the north line of Dallam county, Tex., 98 miles, with a branch from Dumas to Spearman, Tex., 50 miles; the Elkhart & Santa Fe asked authority for an extension of 39 miles in Cimarron county, Okla., and a line from Felt to Colmor, Okla., 110 miles.

CHICAGO & NORTH WESTERN.—This company has reached an agreement with the city of Chicago for the elevation of its tracks on the Wisconsin division from Foster avenue to the city limits, about 2.5 miles. The project will involve an expenditure of about $4,000,000.

DELAWARE & HUDSON.—Elimination of the Wing crossing, on this company's lines 2.5 miles south of Plattsburg, N. Y., has been ordered by the New York Public Service Commission. The elimination is to be accomplished by carrying the Plattsburg-Montreal highway under the tracks. Approval has been given to the installation of automatic signals at Mallery's crossing, north of Corinth, N. Y.

GREAT PACIFIC OF MEXICO.—Concessions have been obtained from the Mexican Government by J. E. Coss, H. O. Zwarg and C. M. Blanco of Mexico, D. F., for the construction of 902 miles of lines within the next 12 years in Oaxaca, Guerrero and Michoacan, Mexico. Construction on the three concessions will be started as soon as the survey and location plans have been finished and approved by the Department of Communications and Public Works of Mexico. The first section of the proposed railway, known as the Blanco-Coss concession, which has already been mentioned in *Railway Age,* includes the construction of a line from Ejutla, Oax., a terminus of the National of Mexico, to Puerto Angel, a port on the Pacific Ocean, 75 miles, with a line along the coast from Pochutla, a point near Puerto Angel, to Salina Cruz, about 93 miles. At Salina Cruz the new line would connect with the National of Tehuantepec and the Pan-American. The Zwarg concession involves the construc-

tion of a line from Puerto Angel, along the Pacific Coast westward, to Acapulco, Gro., 249 miles. The Mexican Pacific Company concession covers the construction of a railway west and north from Acapulco to Uruapan, Micho., 267 miles, with a line branching from Las Balsas, Gro., a point about 63 miles south of Uruapan, eastward to Balsas, 218 miles. At Uruapan and at Balsas the new line would connect with the National of Mexico. The plans for the Great Pacific also contemplate the absorption of the Oaxaca & Ejutla, which is now operated between those two cities in Oaxaca, 44 miles, by the National of Mexico. The natural harbor at Puerto Angel will enable the railroad to connect with the existing water routes from the Orient and the North, Central and South American ports to and from which there is a large prospective export and import traffic. The traffic which it is expected will be developed in the regions to be served by the railway includes commercial lumber, gold and silver ore, onyx and granite, tropical fruits, cattle, coffee, cotton, roatan bananas, copra, petroleum, sugar cane and tobacco.

LEHIGH VALLEY.—Alpine crossing, near Alpine station, N. Y., has been designated for elimination by the New York Public Service Commission. This is to be accomplished by carrying the highway over the railroad 80 feet southeast of the present crossing, on a bridge 340 feet long, and approximately 30 feet wide, spanning three tracks of the Lehigh Valley. The cost is estimated at $103,000, exclusive of land and damages.

NEW YORK CENTRAL.—Detailed plans for the elimination of Wadsworth crossing, Champion, N. Y., have been approved by the Public Service Commission of New York.

NEW YORK CENTRAL.—The Public Service Commission of New York has approved plans and an estimate of cost amounting to $68,030, exclusive of land and damages, in connection with the elimination of the Indian Hill and Bennett crossings at Manchester, N. Y. Approval has also been given to plans for the reconstruction of the bridge carrying the Whitesboro-Trenton state highway over the New York Central tracks in Marcy, N. Y., and for the elimination of Main street crossing, Savannah, N. Y., Gibbs crossing, Mexico, N. Y., and the Watertown-Limerick highway crossing on the Cape Vincent branch.

NORTHERN PACIFIC.—This company has filed with the Interstate Commerce Commission an amended application for authority for the construction of an extension from Brockway to Lewistown, Mont., 208 miles, stating that arrangements have been made with the Chicago, Milwaukee, St. Paul & Pacific for trackage rights over its line from Winnett to Lewistown, 51 miles.

PENNSYLVANIA.—This company has recently awarded a number of contracts, totaling well over $600,000. They are divided as follows: To Steele & Condict, Inc., Jersey City, N. J., for the construction of two new transfer bridges in connection with terminal improvements now being made at Jersey City, at a probable cost of $273,000; to the Pittsburgh-Des Moines Steel Company, Pittsburgh, Pa., for the installation of an incinerator plant in a new produce yard at Pittsburgh, at a cost of $35,000; to Sinclair & Gregg, Philadelphia, Pa., for the construction of coal bunker foundations in connection with track elevation work at South Philadelphia, at an approximate cost of $16,000; to the T. J. Foley Company of Pittsburgh, Pa., for the construction of a bridge over Bowen road, Elma, N. Y., at a cost of $75,000 and the renewal of the north abutment and wing wall of overhead bridge No. 86.55 at Ravenna, Ohio, at a cost of $24,550; to Ferguson & Edmondson Company, Pittsburgh, Pa., for the construction, at an approximate cost of $26,000, of a subway under the company tracks at their intersection with Pennsylvania state highway route No. 88, as relocated, at Belle Valley, Pa.; to the Snyder Construction Company of Lincoln, N. J., for the construction of a bridge costing $25,000 over highway route S-41 at Maple Shade, N. J.; to the Robert E. Lamb Company, Philadelphia, Pa., for the construction of an addition to the inbound freight house at Harrisburg, Pa., at an approximate cost of $97,000, and to the General Construction Company of Gary, Ind., for the building of a new $50,000 brick passenger station and necessary facilities in connection therewith at Gary. It was announced in the *Railway Age* of September 7 that bids were being accepted for the construction of a new passenger station, 80 ft. by 41 ft., at Gary.

UNION PACIFIC.—Contracts have been let to H. A. Baum, Los Angeles, Cal., for the construction of an addition to the roundhouse at Cheyenne, Wyo., at a cost of about $300,000 and for the remodeling of the passenger station at the same point at a cost of approximately $70,000. A contract for the construction of maintenance of way tool houses at various points between Wamsutter, Wyo., and Echo, Utah, has been awarded to the Taylor-Young Company, Salt Lake City, Utah, at a cost of about $27,000. A contract for the changing of the channel of Bitter Creek at Green River, Wyo., and the construction of new yard trackage at a cost of approximately $170,000, has been awarded to the Utah Construction Company, Salt Lake City.

WESTERN PACIFIC. — This company planned to award the contract for the construction of a branch line from Harte, Cal., to Disappointment Slough, 2.8 miles, at a cost of $123,000, on October 14.

Railway Finance

BANGOR & AROOSTOOK.—*Stock.*—The Interstate Commerce Commission has authorized an issue of $1,761,600 of common stock to be sold at not less than $60 a share (par value $50), the proceeds to be used to reimburse the treasury for capital expenditures.

CHESAPEAKE & OHIO.—*Stock.*—The directors of this company on October 15 authorized a reduction in par value of the common stock of this company from $100 to $25, distributing new stock to present stockholders on the basis of four shares of the new to one of the old. They likewise authorized increasing the authorized common stock of the company from $155,000,000 to $300,000,000 and approved a plan for exchanging 2¼ shares of the present C. & O. common stock for each share of Hocking Valley stock outstanding, a step looking to the complete absorption of the latter company by the C. & O. The proposed change in the par value of C. & O. stock is ascribed to the desire to bring it more readily within the reach of employees and small shareholders generally. The plan will be submitted to the C. & O. stockholders on December 3 and to Hocking Valley stockholders on November 29, after which an application for authority to make the exchange will have to be filed with the Interstate Commerce Commission.

CHICAGO, INDIANAPOLIS & LOUISVILLE.—*Equipment Trust.*—The Interstate Commerce Commission has authorized this company to assume obligation and liability in respect of $520,000 of its 5 per cent equipment trust, series E, certificates, to mature in installments up to 1944. The issue was sold under competitive bidding and was awarded to the highest bidder, the Harris Trust & Savings Bank and Potter & Co. at 96.917, which will make the average annual cost to the railroad approximately 5.5 per cent.

CHICAGO & NORTH WESTERN.—*Convertible Bonds.*—The Interstate Commerce Commission has authorized an issue of $72,335,000 of 20-year 4¼ per cent convertible bonds, to be sold at par and accrued interest, and also the issuance from time to time of $68,890,500 of common stock in conversion of the bonds. Of the proceeds of the bonds, $69,270,000 is to be used to retire outstandng obligations of the Northwestern and its subsidiary, the Chicago, St. Paul, Minneapolis & Omaha, and the balance to reimburse the treasury for expenditures for capital purposes.

COLORADO & SOUTHERN.—*Acquisition.*—The Interstate Commerce Commission has authorized this company to acquire control of various lines of the Colorado Railroad in Wyoming and Colorado by reinstatement and renewal of a prior lease and extension of an existing lease.

DELAWARE & NORTHERN RAILWAY.—*Acquisition.*—This company has applied to the Interstate Commerce Commission for authority to acquire and operate the property of the Delaware & Northern Railroad, which has a line from East Branch to Arkville, N. Y., 37.52 miles, following a receivership and reorganization.

LOUISVILLE & NASHVILLE.—*Abandonment.*—This company has applied to the Interstate Commerce Commission for authority to abandon its operation of freight service over a line of the Louisville & Interurban from a point near Louisville to Prospect, Ky., 7.7 miles.

MISSISSIPPI EXPORT.—*Notes.*—The Interstate Commerce Commission has authorized this company to issue $43,514 of promissory notes, $18,514 of which are to be issued to replace a like amount of void notes and the remainder to be sold at not less than par to secure funds for improvement of the railroad's property.

NEW YORK CENTRAL.—*Stock Issue.*—This company has applied to the Interstate Commerce Commission for authority to issue $35,669,900 of additional capital stock at par to stockholders of record as of November 15, on the basis of one share for each 13 shares held.

NEW YORK CENTRAL.—*Equipment Trust.*—The Interstate Commerce Commission has authorized an issue of $10,200,000 of 4½ per cent equipment trust certificates to be sold at not less than 94.919 and accrued dividends.

PENNSYLVANIA.—*Use of New York Terminal by Long Island.*—Examiner M. S. Jameson of the Interstate Commerce Commission, in a proposed report, has recommended that the commission find that public convenience and necessity require the operation by the Long Island, under trackage rights, over the line of the Pennsylvania Tunnel & Terminal, including the partial use of the station and other facilities of the Pennsylvania's New York terminal, but that the terms of an agreement between the companies, dated November 13, 1928, governing the compensation by way of rental to be paid by the Long Island, are inequitable and that the issuance of a certificate be deferred until an agreement shall have been submitted to the commission, the terms of which are found to be fair and reasonable. He also recommends denial of an application by the two companies for an order requiring the use of the facilities by the Long Island on the terms agreed upon. The proposed agreement, to run for 20 years, was proposed to succeed earlier agreements under which the Long Island has used the Pennsylvania facilities, which had been put into effect after modifications required by the New York Transit Commission. The increased rental basis proposed was vigorously opposed by the city and the Association of Long Island Commuters, on the ground that it is inequitable in relation to the proportion of the use of the facilities by the Long Island, and that it would lead to an attempt to increase commutation fares. The report discusses in detail various bases for allocating the costs and proportions of the investment and suggests certain changes in the proposed contract.

Valuation Reports

The Interstate Commerce Commission has issued final valuation reports, finding the final value for rate-making purposes of the property owned and used for common-carrier purposes, as of the respective valuation dates, as follows:

Mineral Range	$2,929,177	1916
Pullman	405,000	1919
Duluth, Missabe & Northern	47,725,000	1919
Spirit Lake Transfer	2,100,000	1919
Interstate Transfer	1,090,000	1919
New York Connecting	24,500,000	1918

Average Prices of Stocks and of Bonds

	Oct. 15	Last week	Last year
Average price of 20 representative railway stocks	155.23	153.43	122.01
Average price of 20 representative railway bonds	90.40	89.31	93.58

Dividends Declared

International Railways of Central America.—Preferred, 1¾ per cent, quarterly, payable November 15 to holders of record October 31.

* * * *

Yards Adjacent to Union Station, Washington, D. C.

Officers

Executive

W. M. Whitenton, assistant vice-president of the Midland Valley, with headquarters at Muskogee, Okla., retired on October 1 at his own request, and **J. L. Higgins,** superintendent of transportation, with office also at Muskogee, has been appointed assistant vice-president, succeeding Mr. Whitenton.

E. I. Rogers, chief engineer of the Peoria & Pekin Union, has been elected president, with headquarters as before at Peoria, Ill. Mr. Rogers, who has spent more than 32 years in railway service, beginning in 1897 as a track apprentice on the Illinois Central, was born on August 3, 1876, at St. Joseph, Mo., and graduated from a civil engineering course at the University of Missouri. Following his track apprenticeship he was advanced to instrumentman and in 1903 he was promoted to assistant engineer at Memphis. Later he

E. I. Rogers

was promoted to roadmaster at Vicksburg, Miss., where he remained until 1912 when he was appointed chief engineer of the Muskogee, Oklahoma & Gulf, with headquarters at Muskogee, Okla. He then served as an engineer with the Lorimer & Gallagher Construction Company and as chief engineer with the Texas Transit Company. In 1916 Mr. Rogers returned to the Illinois Central as an engineer in the valuation department and was shortly thereafter appointed assistant roadmaster at Fort Dodge, Iowa. In October, 1916, he was promoted to roadmaster of the Iowa division, with headquarters at the same point, where he remained until August, 1921, when he was appointed chief engineer of the Peoria & Pekin Union.

Operating

J. L. Strong has been appointed train master and chief dispatcher of the

Chesapeake Beach Railway, with headquarters at Washington, D. C., succeeding C. G. Britton, resigned.

W. H. Kelly, who has been promoted to superintendent of terminals of the Chicago, Burlington & Quincy, with headquarters at St. Louis, Mo., has been connected with that railroad for 20 years. He was born at Russellville, Mo., on September 30, 1879, and attended the Joplin (Mo.) public schools from 1886 to 1895 and the Joplin Business College during 1896 and 1897. Mr. Kelly entered railway service on October 2, 1901, as a brakeman on the St. Louis-San Francisco and until 1909 he served on that road, the Missouri Pacific, the Missouri-Kansas-Texas, the Atchison, Topeka & Santa Fe and the Kansas City Southern as brakeman, switchman and conductor. In 1909 he became a switchman on the Burlington and in the following year he was promoted to assistant yardmaster. Later he was further promoted to night yardmaster and to general yardmaster at Kansas City, Mo.,

W. H. Kelly

and in 1918 he was advanced to trainmaster of the Chicago division. In 1921 Mr. Kelly became terminal trainmaster at Galesburg, Ill., where he remained until his appointment as acting superintendent of the St. Louis Terminals of the Burlington in September, 1928. His promotion to superintendent of the St. Louis terminals became effective on October 1.

Arthur A. Tisdale, who has been promoted to general manager of the Western region of the Canadian National, with headquarters at Winnipeg, Man., has been connected with that railway and its predecessors for 40 years. He was born near Brantford, Ont., on March 8, 1874, and entered railway service on September 18, 1889, in the local freight office of the Grand Trunk (now part of the Canadian National) at Hamilton, Ont. During the following 20 years Mr. Tisdale served the Grand Trunk for seven years as secretary to the chief engineer at Hamilton and at Montreal, Que., for three years as secretary to the general superintendent at Montreal, for five years as chief clerk to the manager, and chief clerk and assistant to the fourth vice-president and general manager. In October, 1909, he was appointed superintendent of the Grand Trunk Pacific (now part of the Canadian National) at Fort William,

Arthur A. Tisdale

Ont., where he remained until June, 1915, when he was transferred to the Regina division at Regina, Sask. The following year he was promoted to purchasing agent and assistant to the vice-president and general manager, with headquarters at Winnipeg and in August, 1920, he was appointed assistant to the general manager at Winnipeg. His promotion to general manager became effective on August 1, 1929.

Traffic

Frank P. Ryan, chief clerk to the vice-president in charge of traffic of the Illinois Central, has been promoted to assistant general passenger agent, with headquarters at the same point.

C. T. Hunt has been appointed New England passenger agent of the Southern, with headquarters at Boston, Mass. **G. C. Daniels** has been appointed special passenger agent at the same point.

B. H. Lord, traffic manager of the Wrightsville & Tennille, with headquarters at Dublin, Ga., has also been appointed traffic manager of the Wadley Southern, the Louisville & Wadley and the Sylvania Central, filling the vacancy caused by the death of **Harry A. Jordan.**

Thornton Lewis has been appointed assistant to the passenger traffic manager of the Chesapeake & Ohio, with headquarters at Richmond, Va. Mr. Lewis at one time was assistant freight traffic manager of the C. & O. at Cincinnati, from which position he resigned to enter other business.

J. J. Snyder has been appointed coal freight agent of the Pittsburgh & Lake Erie with headquarters at Pittsburgh, succeeding David G. Hood, promoted, and **J. W. Glover** has been appointed coal freight representative in the same city. **H. L. Beitzel** has been appointed chief of the tariff bureau, with headquarters at Pittsburgh. His duties will be in connection with tariffs, rates, divisions, etc. **G. F. Campbell** has been appointed division freight agent, with headquarters at Youngstown, Ohio. **R. W. Kamerer** has been appointed general agent at Pittsburgh and **H. B. Stapleton** has been appointed general agent, with headquarters at Brownsville, Pa.

J. J. Monks, assistant freight traffic manager of the New York Central with headquarters at Pittsburgh, Pa., has been appointed freight traffic manager of the Pittsburgh & Lake Erie, with the same headquarters. Mr. Monks was born at Rochester, N. Y., on December 19, 1873. He was educated at St. Mary's School (Rochester), and entered railway service in October, 1895, as clerk on the Blue Line and Canada Southern at Rochester. In May, 1897, he entered the service of the Michigan Central at Detroit, Mich., as clerk and in November, 1898, he became contracting agent of the Blue Line and Canada Southern at Chicago. He became traveling freight agent of the North Shore Dispatch in April, 1900, and four years later he was appointed commercial agent of the New York Central lines at Omaha, Nebr. He was promoted to general agent of that road in November, 1914, and in May, 1918, he was appointed to a similar position on the Pittsburgh & Lake Erie at Pittsburgh. He subsequently served as division freight agent of the New York Central at Youngstown, Ohio, assistant general freight agent of the same road at Pittsburgh, and assistant freight traffic manager at the same point, the position he held at the time of his recent appointment.

Thomas R. Fitzpatrick, general coal freight agent of the Pittsburgh & Lake Erie, with headquarters at Pittsburgh, Pa., has been appointed coal traffic manager, with the same headquarters. Mr. Fitzpatrick was born at Sharpsburg, Pa., on July 24, 1893. He entered railway service in 1909 as stenographer in the traffic department of the Pittsburgh & Lake Erie at Pittsburgh. He subsequently served as stenographer in the tariff bureau, stenographer in the freight traffic department and clerk in the freight traffic department. In 1914, Mr. Fitzpatrick was appointed secretary to the general freight agent and the following year he became clerk in the freight traffic department. In 1917 he was appointed traveling freight agent, later in the same year again serving as clerk at Pittsburgh. He became chief clerk in the office of the chief of the tariff bureau in 1919, then served as general coal freight agent, the position he held at the time of his recent promotion.

David G. Hood, coal freight agent of the Pittsburgh & Lake Erie, has been

appointed assistant to the traffic manager, with headquarters as before at Pittsburgh, Pa. Mr. Hood was born in Beaver County, Pa., on July 15, 1862. He entered railway service in 1883 as operator on the Pittsburgh & Lake Erie at Middletown, Pa. One year later he was transferred in the same capacity to New Castle Junction, Pa., and in 1886 he became agent at Monaca, Pa. He later served as freight agent at McKeesport, assistant freight agent at Pittsburgh, and freight agent at the same point. In 1910, Mr. Hood was appointed general agent at Pittsburgh, then serving as coal freight agent at that point, the position he held at the time of his recent promotion.

Engineering, Maintenance of Way and Signaling

G. S. Lovering, principal assistant engineer of the Minneapolis & St. Louis, with headquarters at Minneapolis, Minn., has been promoted to assistant chief engineer, with the same headquarters. **P. M. Stutrud** has been appointed office engineer.

J. F. Donovan, division engineer of the Lehigh Valley, with headquarters at Easton, Pa., has been appointed assistant chief engineer of maintenance, with headquarters at Bethlehem, Pa. **R. E. Patterson,** division engineer at Sayre, Pa., will succeed Mr. Donovan as division engineer at Easton. **A. B. Shimer,** assistant division engineer, with headquarters at Auburn, N. Y., will succeed Mr. Patterson as division engineer at Sayre. The positions of general inspector maintenance of way and assistant division engineer, Auburn division have been abolished.

M. O. Scobee, who has been promoted to superintendent of telegraph of the Southern Pacific Lines, with headquarters at Houston, Tex., gained his first railroad experience from October, 1897, to October, 1898, when he worked as a station helper for the Missouri-Kansas-Texas at Rocheport, Mo., without salary in order to learn telegraphy. From the later date to June, 1900, he was employed by this road as a station agent and during the following four years worked as a telegrapher and station agent during the summer months of the years in which he attended Westminster College at Fulton, Mo. From June, 1904, to March, 1910, he served as telegrapher, station agent, clerk to the chief dispatcher, and train dispatcher of the same road, while during the following two years he was tonnage inspector for the superintendent of transportation. From March, 1912, to October of the same year, he was train dispatcher and from the latter date to March, 1916, he was chief clerk to the general superintendent of telegraph. He resigned from the latter position to become a clerk in the office of the general manager of the Western Union Telegraph Company at Dallas, Tex., and was assigned to special work. In December, 1917, he resigned to become superintendent of telegraph of the El Paso & South Western (now a part of the Southern Pacific,) which position he held until November 1, 1924. On this date he was appointed district telephone and telegraph supervisor of the Southern Pacific at El Paso, Tex., which position he has held until his recent appointment.

Mechanical

J. B. Neish, master mechanic of the St. Paul division of the Northern Pacific, with headquarters at St. Paul, Minn., has been promoted to assistant to the mechanical superintendent of the Western district, with headquarters at Seattle, Wash. Mr. Neish takes over the duties of **James Simpson, general master** mechanic of the Western district, with headquarters at Seattle, who retired on October 1 after 51 years of railway service, over 46 of which have been with the Northern Pacific. The office of general master mechanic of the Western district has been abolished. **N. E. Entriken,** assistant master mechanic of the Fargo division, with headquarters at Staples, Minn., has been promoted to master mechanic of the St. Paul division, succeeding Mr. Neish, and the position of master mechanic at Fargo has been abolished. Mr. Simpson, who retires as general master mechanic of the Western district, was born at Shrewsbury, England, and entered railway service in 1878 as an apprentice machinist on the Michigan Central at Jackson, Mich. He entered the service of the Northern Pacific in 1883 as a machinist at Brainerd, Minn., and during the following 24 years he was advanced successively through the positions of machinist at Mandan, N. D., night foreman at Jamestown, N. D., machine shop foreman at Mandan and at Fargo, N. D., and general foreman at Mandan and at Staples. On June 1, 1907, Mr. Simpson was promoted to master mechanic at Dilworth, Minn., and was transferred to Livingston, Mont., on March 1, 1912, and to Spokane, Wash., on October 25, 1918. On August 26, 1920, he was promoted to general master mechanic of the Western district, a position he held until his retirement on October 1.

Special

Fred V. Seibert has been appointed superintendent of natural resources for the Canadian National, with jurisdiction within the provinces of Manitoba and Saskatchewan. Mr. Seibert was formerly inspector of mines of the Dominion Federal Mines Branch at Ottawa. He was graduated from Toronto University and for many years served in the surveys branch of the Department of the Interior at Ottawa. He also spent several years with the Natural Resources Intelligence Service. His headquarters will be at Winnipeg, Man.

Obituary

Judge Hamilton McWhorter, former assistant general counsel of the Southern, died at his home in Athens, Ga., on October 12.

Peter L. McGue, general agent of the freight department of the Chicago, Rock Island & Pacific at Colorado Springs, Colo., died of heart disease at Harlingen, Tex., on October 7.

C. G. Richmond, superintendent of stations and transfers of the Illinois Central, with headquarters at Chicago, died on October 12, of a muscular disability of the heart.

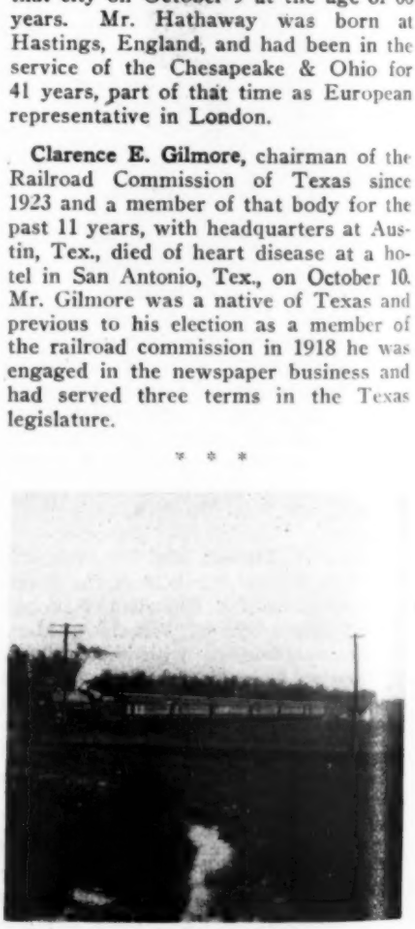
Harry A. Jordan, traffic manager of the Wadley Southern, the Louisivlle & Wadley and the Sylvania Central, with headquarters at Savannah, Ga., died at his home in that city on October 8.

R. W. Bell, who resigned as general superintendent of motive power of the Illinois Central on October 1, died of acute indigestion at Mackinac Island, Mich., on October 14.

Harry P. Hathaway, assistant general freight agent of the Chesapeake & Ohio, with headquarters at Chicago, died in that city on October 9 at the age of 66 years. Mr. Hathaway was born at Hastings, England, and had been in the service of the Chesapeake & Ohio for 41 years, part of that time as European representative in London.

Clarence E. Gilmore, chairman of the Railroad Commission of Texas since 1923 and a member of that body for the past 11 years, with headquarters at Austin, Tex., died of heart disease at a hotel in San Antonio, Tex., on October 10. Mr. Gilmore was a native of Texas and previous to his election as a member of the railroad commission in 1918 he was engaged in the newspaper business and had served three terms in the Texas legislature.

* * *



The Jersey Central's "Blue Comet"